THE RELATIONSHIP OF ELEMENTARY TEACHERS' YEARS OF TEACHING EXPERIENCE, PERCEPTIONS OF OCCUPATIONAL STRESS, SELF-ACCEPTANCE, AND CHALLENGING STUDENT BEHAVIOR TO BURNOUT SYMPTOMS IN THE UNITED STATES AND GERMANY

by

Annette Ullrich

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Approved by:

_____
Dr. Richard G. Lambert

_____
Dr. Wendy M. Wood

_____
Dr. Maria Yon

_____
Dr. Chuang Wang

_____
Dr. Ya-yu Lo

_____
Dr. Robert Reimer

ABSTRACT

ANNETTE ULLRICH: The relationship of elementary teachers' years of teaching experience, perceptions of occupational stress, self-acceptance, and challenging student behavior to burnout symptoms in the United States and Germany. (Under the direction of DR. RICHARD G. LAMBERT)

In the United States, stress and burnout have been identified as contributors to the shortage and attrition of both general and special education teachers (Edmonson, 2006). In Germany, intense political debate has been related to premature retirement of teachers (Weber, 2002). Many teachers retire before the official retirement age of 65 years based on symptoms and diagnoses that may be related to stress and burnout (Bauer et al., 2001). The present study investigated the extent to which elementary teachers in the United States and Germany experience burnout due to occupational stress. Hierarchical linear modeling was used to examine differences in levels of burnout within teachers, between teachers, and between schools. In both samples from the United States and Germany, results showed little variance in reported burnout symptoms between schools. The independent variables were associated with burnout symptoms in the predicted direction; however, in the U.S. sample years of experience was positively related to burnout, while it was inversely related to burnout in the German sample. These models accounted for one third of the variance in burnout between teachers in the U.S. sample and for two thirds of the variance in burnout between teachers in the German sample. Implications for future research include determining the factor structure of the German CARD version. Implications for practice are related to teacher training, well-designed professional development opportunities, and effective leadership preparation.

DEDICATION

To Matthias

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LIST OF ABBREVIATIONS

DV	Dependent Variable
IV	Independent Variable
EE	Emotional Exhaustion
DP	Depersonalization
PA	Personal Accomplishment
SAC	Self-Acceptance
CARD	Classroom Appraisal of Resources and Demands
PRI	Preventive Resources Inventory
MBI	Maslach Burnout Inventory

CHAPTER 1: INTRODUCTION

Teachers all over the world, of different grade levels and time periods have described their profession as stressful (Gugliemi & Tatrow, 1998; Maslach, Schaufeli, & Leiter, 2001; Kyriacou, 2001). Teacher stress and burnout is a world-wide phenomenon and has been researched extensively. Over the past 30 years researchers have been interested in finding out about the stressors in the teaching profession (Friedman, 2006). Previous cross-cultural research in China (Chan, 2002), the Netherlands (Brouwers & Tomic, 2000), England (Hastings & Bham, 2003), Turkey (Kiziltepe, 2006), Malaysia (Segumpan & Bahari, 2006), Israel (Friedman, 1995) or Greece (Kokkinos, 2007) yielded common themes regarding teacher experiences of stress and burnout. Kyriacou (1998) defined teacher stress as "the experience by a teacher of unpleasant emotions such as tension, frustration, anxiety, anger and depression, resulting from aspects of his or her work as a teacher" (p. 4). Other authors use the term stress when referring to the degree to which work demands cause pressure (Gugliemi & Tatrow, 1998).

Sources of stress in teachers include the following demands: Teaching children with problem behaviors (Gallagher & Lambert, 2006; Pratt, 1978), lack of motivation in students, larger class sizes (French, 1993), administrative or policy-related issues, excessive paperwork requirements, workload and time constraints, lack of instructional resources, lack of parental support, lack of administrative support, pressure from administrators, specifically those related to mandated curricula and instructional strategies, and relationships with others (Cooley & Yovanoff, 1996; Kyriacou, 2001;

Lambert & McCarthy, 2006; Montgomery & Rupp, 2005; Moriarty, Edmonds, Blatchford, & Martin, 2001). In general, teaching is an occupation with relatively low compensation compared to other professions with similar levels of training (Gilroy, 2005). Another characteristic feature of the teaching profession is the open assignment of teaching. Often there is no clear goal, which may potentially for many teachers result in overtaxing themselves (Krause, 2003b).

While these demands and stressors have consistently appeared in the teacher stress research literature for over 30 years (Kyriacou, 2001), working conditions for teachers have also become more difficult in recent years in several significant ways (Esteve, 2000). Both in Germany and the United States students may arrive differently at school than they did in previous generations. They come to school less ready to learn, with fewer hours of sleep, less structure in their homes, and more exposure to electronic entertainment (McCarthy & Lambert, 2006; Mössle et al., 2006). Children are more likely to come from families where languages other than English or German are spoken. They may also be more likely to be diverse in their abilities. A higher percentage of children than in previous generations have two working parents. Additionally, both in the United States and in Germany parents have moved away from respect, recognition, and support for teachers to a stance of advocacy for their children (Lambert, McCarthy, O'Donnell, & Wang, in press). For example, Bauer et al. (2006) found that 42% in a sample of 949 German teachers reported verbal insults from students. In the United States, No Child Left Behind (2001) mandates for highly qualified teachers and high stakes testing put additional pressures on teachers (Mathison & Freeman, 2006). All of

those factors make teaching a more stressful occupation than it has ever been (McCarthy & Lambert, 2006).

The literature in stress and coping provides various models of stress. According to transactional models of stress (Lazarus & Folkman, 1984), the stress response occurs if perceived demands outweigh perceived resources for coping. This can lead to physiological, behavioral, and psychological stress symptoms (Hobfoll, 1989; Lazarus, 1999; Sapolsky, 1998), which can include health problems and psychological burnout (McCarthy, Kissen, Yadley, Wood, & Lambert, 2006). Herbert J. Freudenberger, a German researcher who lived in the United States, was the first to define the concept of burnout and defined it as "the state of physical and emotional depletion resulting from conditions of work" (1974). Matheny, Gfroerer, and Harris (2000) defined burnout as a loss of idealism and enthusiasm for work. Burnout was first operationalized by Maslach and Jackson (1981). In their seminal work they defined burnout as a psychological syndrome and combination of emotional exhaustion (EE; stress component), tendency to depersonalize others (DP; evaluation of others component, i.e., taking a cynical stance towards individuals for whom one is working), and reduced sense of personal accomplishment (PA; evaluation of self component). The literature suggests that DP occurs as a form of defensive withdrawal (Lee & Ashforth, 1996). Maslach and Schaufeli (1993) described burnout as a stress-induced phenomenon or "a response to the chronic emotional strain of dealing extensively with other human beings, particularly when they are troubled or having problems" (p. 3).

Teachers are the largest professional group included in burnout research, comprising 22% of all samples (Schaufeli & Enzmann, 1998; Vandenberghe &

Huberman, 1999). First empirical studies on stress and burnout in teachers emerged in the early 1980s (Friedman, 2006). Today teachers are the largest professional group represented in research on stress and burnout internationally (Vandenberghe & Huberman, 1999).

1.1 Statement of Problem

Both in the United States and in Germany burnout rates of up to 50% have been reported (Barth, 1997; Bauer et al., 2007; Byrne, 1999). In the U.S., stress and burnout have been identified as contributors to the shortage and attrition of both general (Burke, Greenglass, & Schwarzer, 1996; Weisberg & Sagie, 1999) and special education teachers (Billingsley, 2005; Edmonson & Thompson, 2002; Edmonson, 2006). In Germany, early retirement based on health-related reasons has been a concern for several years (Unterbrink et al., 2007).

Teacher shortage in the United States. A national shortage of teachers with a critical shortage of special education teachers is prevailing in the United States. The National Center for Education Statistics (NCES) conducts "Teacher Follow-up Surveys" to the "National Schools and Staffing Survey" every 4 years. For the 2004-2005 school year, data showed that over one third of teachers in their first year of teaching and almost one fourth of general and special education teachers with 1 to 3 years of experience left the profession that year (Cox, Parmer, Tourkin, Warner, & Lyter, 2007). According to Ingersoll and Smith (2004), the attrition rate of teachers who quit after 5 years is close to 50%. Over one third of teachers leaves the profession by the end of their sixth year (Hanushek, Kain, & Rivkin, 2004). In special education, approximately 50% of new teachers leave the field or transfer to general education within 4 years (Darling-

Hammond & Sykes, 2003). According to Darling-Hammond and Sykes (2003), schools hired 232,000 special educators in 1999 and 287,000 special educators left the profession in the same year. In 2000, 123,000 students graduated from initial licensure programs in special education while only approximately 100,000 special education teachers are needed annually. This suggests that the supply of special education teachers is higher than the demand, because more students graduated than needed; however, many graduates leave the profession and take other jobs upon graduation. The stresses encountered during clinical experiences in the classroom may be among the major contributors for beginning teachers' decision to leave the profession.

Early retirement and mental health issues in Germany. Intense political debate has recently been related to premature retirement of teachers in Germany (Weber, 2002; Halasz, Santiago, Ekholm, Matthews, & McKenzie, 2004. In the county of Baden-Württemberg, Germany, approximately 50% of teachers who left the profession in 1999 retired early based on medical reasons, which may be related to stress and burnout (Bauer et al., 2001; Finanzministerium Baden-Württemberg, 1999; Reinke-Nobbe, & Vernier, 2001; Rudow, 1999). Weber, Weltle, and Lederer (2002) conducted a document analysis of 7,103 medical assessments between 1996 and 1999 and found that a psychological diagnosis was given for 52% of teachers who retired early in this time period. In 2000, according to the German Federal Bureau of Statistics (Statistisches Bundesamt Deutschland, 2008), 64% of teachers who retired early did so based on health-related reasons. This number is much lower for other professionals such as judges and administrative positions. In addition, an increase was noted for teachers retiring for medical reasons before retirement age from 28% in 2004 to 30% in 2005 (Statistisches

Bundesamt Deutschland, 2008). In the same year, 26% of teachers retired at the normal retirement age, whereas the same was true for 54% of employees in other public services (Unterbrink et al., 2007).

The percentage of early retirement has decreased with the introduction of a financial disadvantage for early retirement of teachers in 2001. This includes withholding the full pension payment until the official retirement age of 65. The burnout rates, however, have since then not decreased. Schaarschmidt (2005) surveyed 20,000 teachers from 14 German "Länder" (German federal states) to explore teachers' personal resources in coping with demands using the instrument AVEM (Arbeitsbezogene Verhaltens- und Erlebensmuster/ Work-related Patterns of Behavior and Experience; Schaarschmidt & Fischer, 1996). He found that 30% of the participants were rated as "resignated" (type B, reduced involvement with work, highly at risk for burnout) and 30% were classified as "overcommitted" (type A, intense involvement, at risk for burnout). Twenty-three percent of teachers were rated as "under-committed" (type S, lack of involvement, self-protection) and only 17% belonged to the "Health" category (type G, clear but not excessive involvement).

Using the same instrument, Bauer et al. (2006) found 34% of a sample of 400 high school teachers in the southwest of Germany belonged to "risk type B." An additional 18% of the sample belonged to "risk type A." This means that more than half of the teacher sample exhibited work-related behaviors that put them at risk for burnout. Results from this study also showed that 20.3% of the sample suffered from psychological and psychosomatic symptoms as measured by the Symptom Checklist 90-R (SCL 90R). There was a significant relationship between "type B" and high scores on

the SCL 90R. According to Bauer et al. (2006), teachers in this sample had higher burnout rates than physicians (Bergner, 2004) or nurses and social workers (Schaarschmidt, 2004). Nübling, Stößel, Hasselhorn, Michaelis, and Hoffmann (2005) also found that burnout rates among German teachers were higher compared to other professions.

A study conducted by Bauer et al. (2007) that surveyed 949 German teachers using the "General Health Questionnaire 12" (GHQ-12; Goldberg & Williams, 1988) found that nearly 30% reported significant mental health problems. A study on a British general population sample found a mental health problems rate of only 15% for women and 11% for men. In the German teacher sample, the mean value on the GHQ-12 was comparable to the mean value on general health in a study on staff in a psychiatric hospital in England as conducted by Prosser et al. (1996). Finally, Unterbrink et al. (2007) found in a sample of 1,472 German teachers that 21.6% of the sample fell into the category that could be characterized by an imbalance between effort and reward, i.e., high effort and low reward.

Teacher performance and student learning in the United States and Germany. These findings are alarming not only because of the economic consequences, but also because of the consequences for student learning. For example, Weber et al. (2002) showed that Bavaria is spending 250 million Euro per year on teachers who retire early. It can also be assumed that teachers who are burned out are not able to teach effectively, thus negatively impacting student learning and achievement. Klusmann, Kunter, Trautwein, and Baumert (2006) found that students perceived lessons more positively if they were held by teachers who belonged to the Health category (type 5) according to

Schaarschmidt's (2005) terminology. Krause (2003) also found significant correlations between work-related stress in classrooms and student achievement. Job satisfaction has also been found to correlate with student achievement (Michaelowa, 2002). Kyriacou and Sutcliffe (1978) reported that teacher satisfaction was inversely related to stress levels in teachers. According to Gruneberg's (1979) General Relationship Model, job satisfaction is a global outcome variable and is related to factors such as perceived resources and demands, personality, and demographics.

1.2 Unsolved Issues Related to Teacher Stress and Burnout

Although the research literature on teacher stress and burnout is vast, it is not known how teachers can be best supported to prevent or relieve burnout (Lambert & McCarthy, 2006). In addition, not all teachers who experience the same or similar environmental stressors perceive stress and experience burnout symptoms. Sources of teacher stress can be grouped into two categories: School-specific factors and teacher-specific factors, which will be further described in chapter 2. It is not clear if environmental factors or personality factors play a more important role in teacher perceptions of stress and burnout. According to Zellars, Hochwarter, and Perrewé (2004), there has been an emphasis on examining workplace conditions and factors in research on occupational stress and burnout, e.g., lack of communication, low pay or lack of role specification (McCarthy et al., 2009). The role of individual differences in reporting stress and burnout symptoms has been under-researched. The question of why many teachers are able to cope with the stressors inherent to teaching while for others they seem insurmountable remains unanswered. In the following section, the significance of

the burnout phenomenon and its relevance for teachers is outlined. Next, a rationale for the inclusion of the teacher-level predictors in this study is provided.

Predictors for burnout. The research base on potential predictors of burnout is extensive and results are sometimes contradictory (Kyriacou & Coulthard, 2000). For example, Pines (1993) states in a review of the literature on burnout that "those with a strong desire to give of themselves and who feel helpful, excited and idealistic are susceptible to the most severe burnout" (p. 30). In contrast, it could be shown for both a sample of social workers (Schmitz, 1998) and a sample of teachers (Schmitz & Leidl, 1999) in Germany that unrealistic expectations correlated higher with burnout symptoms than any other variables. Pines (2002) later attached an existential perspective to teacher burnout in the sense that teachers who no longer perceive a sense of significance to teaching are more at risk to develop burnout symptoms. Upon reviewing the research on burnout, Sosnowsky (2007) also questioned the common notion that particularly committed teachers burn out. Finally, a recent longitudinal study over a period of 12 years conducted by Rauin (2007) could not confirm the hypothesis of highly committed teachers being more at risk for burnout because of the discrepancy between their idealistic goals and reality. Rauin surveyed 1,100 teachers from three teacher training universities in Baden-Württemberg at the beginning of their professional training, after six semesters, and at the end of the teacher training. The fourth and last assessment occurred after four years of teaching. Based on results from the longitudinal study by Rauin, three types of students can be described: 27% of the participants were at-risk teacher education students, 38% were committed teacher education students, and 35% were pragmatic teacher education students. In the fourth assessment, approximately 10%

felt overwhelmed by the daily demands and 60% of those who felt overwhelmed had already felt overwhelmed during their teacher training and were not very committed. Only 10% of the teachers who felt overwhelmed had previously belonged to the group of committed students. Thus, unrealistic expectations were a strong predictor of perceptions of stress and burnout (Rauin, 2007; Schaarschmidt & Fisher, 2005). The literature suggests that each of the burnout dimensions is associated with different variables (Aluja, Blanch, & Garcia, 2005; Lee & Ashforth, 1996).

Years of experience. The literature is inconclusive with regard to the effects of teacher experience on teacher stress and burnout. For example, Russell, Altmaier, and van Velzen (1987) found a weak correlation between teaching experience and occupational stress. Malik, Müller, and Meinke (1991) found no relationship at all. Other studies found that teachers with more experience exhibit lower levels of burnout (Banks & Necco, 1990; Crane & Iwanicki, 1986; Zabel & Zabel, 2001). McCarthy et al. (2006) found a relationship between being a first-year teacher and the EE component of burnout among preschool and elementary school teachers. A meta-analysis by Edmonson and Thompson (2002) noted some inconsistency in the operationalization of the construct experience in the literature. While most authors use it to describe the total number of years a person has been working in education, some authors use it when referring to a person's tenure in his or her current position. Therefore the current investigation distinguishes between the four variables: (a) total years of experience in teaching, (b) number of years at current school, (c) whether the teacher is new to the profession (less than two years of experience), and (d) whether the teacher is new to the current school (less than two years of experience at the current school).

Classroom demands. Maintaining classroom discipline is a well-researched source of teacher stress and burnout (Borg & Falzon, 1989; Friedman, 1995; Kyriacou, 1987). Research has shown that there is a relationship between challenging student behavior and teacher stress and burnout (Blase, 1986; Byrne, 1991; Kyriacou, 2001; Lewis, 1999). Schaarschmidt, Kieschke, and Fischer (1999) found difficult student behavior to be the most important predictor of teacher stress. The impact of discipline problems on perceived teacher stress was more significant than relationships with principals or working with parents. The reason why challenging student behavior is stressful for teachers is that it prevents teachers from perceiving themselves as effective professionals (Travers & Cooper, 1996; Verkuyten, 2002). Some authors conceptualized stress as the relationship between the demands of working with children with challenging behaviors and teacher self-efficacy (Greene, Abidin, & Kmetz, 1997).

Additionally, stress and burnout can affect teacher perceptions and reactions to challenging student behavior (Hastings & Brown, 2002). Brouwers and Tomic (2000) found when students perceive teacher stress, they have a tendency to increase their resistance towards teachers' efforts to maintain classroom discipline. This results in a "self-reinforcing cycle," because stressed teachers also have less tolerance for students who exhibit challenging behaviors (Whiteman, Young, & Young, 1985). It is not clear if teachers in different countries perceive demands related to student behavior in different ways and why.

Occupational stress. Research has shown that occupational stress at both the organizational and individual teacher level is the strongest predictor of burnout symptoms (Shoho, 2002). Transactional models emphasize a complex interaction between both a

range of personality and environmental factors. More specifically, stress is experienced if subjectively perceived demands are not exceeded by available resources for coping (McCarthy et al., 2006). Methods employed to assess various aspects of stress and burnout have varied over the past 30 years (Kyriacou & Sutcliffe, 1978). Some of the first stress measurement instruments included effects of negative life events (Holmes & Rahe, 1967) as perceived by research participants, attending exclusively to the demands side of the equation, but did not examine the role of resources. Some instruments have solely focused on the measurement of coping strategies. For example, Folkman and Lazarus (1988a; b) first examined behaviors used to deal with stressors. Other instruments assess coping resources which include skills and abilities that provide a foundation for coping strategies (McCarthy, Lambert, & Brack, 1997).

While transactional models of stress and coping emphasize the importance of cognitive appraisal of demands and resources in determining whether or not demands are experienced as stressors (Matheny, Aycock, Pugh, Curlette, & Cannella, 1986), most of the research on stress and coping has conceptualized stress as a construct consisting of one dimension. Very rarely has stress been operationalized as the difference between the following two conceptually distinct constructs: Demands and resources (McCarthy, Lambert, O'Donnell, & Melendres, 2009). The Classroom Appraisal of Resources and Demands (CARD) by Lambert, McCarthy, and Abbot-Shim (2001) measures teachers' cognitive appraisals of both perceived resources and demands. Based on transactional models of stress, the CARD focuses specifically on the demands of the classroom environment and the material resources available to teachers to meet those demands. Even though experts in the field of stress research have long called for instruments that

measure individual occupational circumstances, very little research exists that takes the whole of occupational demands and resources of teachers in the classroom setting into account. Few studies have aimed at addressing the central theoretical premise of transactional models of stress (stress symptoms occur when perceived demands exceed perceived resources).

Self-Acceptance. McCarthy et al. (2002) defined SAC as "a set of beliefs and behaviors indicating acceptance of self, others, and the world" (p. 25). They suggested that an adequate level of SAC can contribute to more adaptive evaluations of life demands, thus making the stress response less likely to occur or escalate if not necessary. This preventive resource construct may be an important teacher-specific factor and preventive resource, which has received very little attention in the literature on teacher stress and coping. It was included in this study because a study by Lambert et al. (2006) using the Preventive Resources Inventory (PRI; McCarthy & Lambert, 2001) found a significant association between SAC and teacher stress as well as teacher health (Lambert, Ullrich, & O'Donnell, 2008). According to Lambert et al. (2006), SAC can be considered as theoretically central to the construct of preventive coping. McCarthy et al. (2006) found this psychological coping resource to be more significant in predicting teacher burnout (EE) than being able to self-disclose, to lower emotional arousal through relaxation procedures, and to use problem-solving skills.

Link to Prior Research

McCarthy et al. (2009) found in a sample of 451 elementary teachers that individual teacher factors (years of teaching experience, perceived resources and demands, preventive coping) were more strongly associated with burnout than factors at

the school level. The assumption of transactional models of stress, which is related to an imbalance between perceived resources and demands, was tested. This was done by examining burnout levels in two ways: (a) between schools, with teacher-level perceptions of demands and resources aggregated to the group level and (b) at the individual teacher level within schools with perceptions of classroom demands and resources, teachers' coping resources, and years of experience taken into account. The underlying research hypothesis of this study is to test transactional models of stress (Lazarus & Folkman, 1984) in a different cultural context by closely replicating the research design used by McCarthy et al. (2009).

1.3 Research Purpose/ Variables

The purpose of this study was to examine the relationship of general and special education elementary teachers' experience, perceptions of occupational stress, classroom demands, and Self-Acceptance to burnout symptoms in the United States and Germany. The independent or predictor variables in this study were teachers' (a) perceptions of classroom demands, (b) occupational stress, (c) self-acceptance, (d) years of experience, (e) number of years at current school, (f) whether the teacher is new to the profession, and (g) whether the teacher is new to the current school. The dependent or outcome variable was burnout symptoms. Data collected from a sample of 469 German elementary teachers in Baden-Württemberg were compared to an existing data set of 451 teachers from a large metropolitan area in North Carolina.

1.4 Significance of the Study

Teachers play an extraordinarily important role in providing the support and guidance that young people need as they set out to find their way in today's world and

society. It is important that we identify factors which might further deplete our teaching force through attrition or early retirement in order to best support teachers. If educational systems fail to identify factors that contribute to teacher attrition, the demands for teachers may potentially become higher, which in turn will cause higher shortages and attrition (Gugliemi & Tatrow, 1998).

Teacher stress and burnout may not be the only reasons for individual teachers' decisions to leave the field, but they are major contributors to overall turnover and attrition in the profession (Lambert & McCarthy, 2006). A better understanding of the factors that contribute to stress and burnout in teachers can inform efforts to increase coping skills in teachers. Exploring stressors that may trigger burnout symptoms has a potential for improving supports in schools for administrators, teachers, and students (Cooley & Yavonoff, 1996).

Findings from this study can potentially contribute to stronger professional development (Makkonen, 2005; Richin, Banyon, Stein, & Banyon, 2003) and inform teacher pre- and in-service training, which address the practical needs of teachers. If teacher satisfaction increases, this may promote higher instructional efficacy and improve student learning. This is particularly important in light of the results of the Programme for International Student Assessment (PISA) Consortium, which have shown that German students do not fare well in core academic areas (Bulmahn, 2002; Deutsches PISA-Konsortium, 2001). High-achieving countries as measured by PISA as well as in the Third International Math and Science Study (TIMSS) were found to pay particular attention on teacher training and ongoing supports.

Next, this study will not only evaluate and compare the severity of burnout symptoms in the United States and Germany, but will also examine the impact of the predictor variables on different levels of analysis within teachers, between teachers, between schools, and between the United States and Germany. Learning about cultural differences may be helpful in reflecting on perspectives and efforts to help reduce stressors in the teaching profession in new ways. In addition to addressing the recommendation for future research to extend the reliability and validity of the CARD and the PRI in other cultural and educational settings, the contribution of the present study consists in the cross-cultural comparison that it facilitates by closely replicating the research design used by McCarthy et al. (2009), which has also been recommended as an area for further research. By adding a cross-cultural perspective to the prior research base this study may contribute to the development of theory related to teacher stress and burnout. To date, no study has been conducted that cross-culturally compared stress and burnout levels in elementary teachers in the U.S. and Germany.

1.5 Research Questions

Each of the following research questions will be addressed by analyzing the country specific data from the U.S. and German teacher sample and by contrasting the two samples of teachers:

1. What challenges do teachers report as most demanding?
2. What percentage of teachers is at risk for stress?
3. How much variance exists in reported burnout symptoms within elementary teachers between individual teachers and individual schools?

4. Is there an association between burnout symptoms of teachers and their experience, perceived classroom demands, occupational stress, and self-acceptance?

Definition of Terms

Years of teaching experience: According to Edmonson and Thompson (2002) teaching experience has been operationalized in different ways. For the most part it is defined as the total number of years a person has been working in teaching. In this study four different aspects of the concept are considered: (a) total years of experience in teaching, (b) number of years at current school, (c) whether the teacher is new to the profession (less than two years of experience), and (d) whether the teacher is new to the current school (less than two years of experience at the current school).

Challenging student behavior: Demands associated with behavior management and interactions with children who present challenges to the learning environment.

Coping: According to transactional models of stress and coping, the stress response occurs only if demands are perceived to be higher than resources. Psychological coping resources are an individual teacher level variable. They are pivotal in appraising challenging situations or interactions. Coping can be defined as the process of using specific strategies to deal with a stressful situation. Primary cognitive appraisal of a situation or interaction is directed towards demands and preventive coping strategies, while secondary appraisal addresses combative coping resources, e.g., available social support. Coping resources can be combative or preventative in nature (see figure 1, p. 25).

Self-acceptance: Self-acceptance is a coping resource that falls in both categories, combative or preventative coping resources. It can be defined as a set of beliefs and behaviors related to acceptance of self, others, and the world. The degree to which one can accept and overcome personal strengths and weaknesses in demanding life situations has been related to stress and burnout in teachers (McCarthy et al., 2002).

Occupational stress: According to transactional models of stress (Lazarus & Folkman, 1984), the stress response occurs if perceived demands outweigh perceived resources for coping. This can lead to physiological, behavioral, and psychological stress symptoms, which can include burnout (McCarthy et al., 2006).

Burnout: Burnout is a psychological syndrome consisting of the following dimensions: (a) Emotional Exhaustion (stress component, referring to feelings of being overextended emotionally), (b) Depersonalization (evaluation of others component, i.e., taking a cynical stance towards others), and (c) lack of Personal Accomplishment (PA; evaluation of self component, related to lowered feelings of competence) (Maslach & Jackson, 1981).

Hierarchical linear modeling. Differences among teachers can occur based on factors from different levels. Hierarchical linear modeling takes such group effects into account by adjusting for effects of variables measured at a lower level and estimating the effects of variables measured at a higher level.

CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

This chapter outlines four major theories and concepts typically used in examining stress and burnout. For research in the United States, these include response models, which define stress exclusively as a bodily reaction to stress; stimulus models, which focus on negative life events; the conversation of resources model, which focuses mainly on large losses; and finally transactional models of stress, which are based on the assumption that the stress response is triggered by a perceived inequality between resources and demands. Research in German speaking countries has largely been based on a model by Schaarschmidt and Fischer (1996), which conceptualized stress based on 4 types of personal work-related coping strategies, but does not take preventive coping resources into account. The second model that was found to be used in research on teacher stress and coping in German speaking countries is Rudow's model (2000). It is very closely related to transactional models. The theoretical underpinnings of transactional models of stress will guide this investigation, facilitate data analysis, and provide a basis for predicting results. Next, this chapter reviews the empirical literature related to teacher stress and burnout. Findings from research on factors that contribute to teacher stress and burnout as they relate to the purpose of the present investigation are provided. The themes include impact of culture and society, teacher-specific factors (teaching experience), and school-specific factors (type of school, demographic

variables). Standards for group studies as recommended by Gersten et al. (2004) were applied to determine the strength of studies. Gersten et al. (2004) recommend for topic summaries to either include two strong research studies that meet quality criteria for conceptual framework, sample size, measurement, and analysis or four studies of moderate quality (meeting approximately 80% of the quality indicators). The purpose of this chapter is to provide background information for the present study and to show how it relates to previous empirical research on teacher stress and burnout.

2.1 Theoretical Framework

In a meta-analysis of research on teacher stress and burnout, Gugliemi and Tatrow (1998) suggested a lack of a theoretical framework that can guide and unify research on stress and burnout in teachers. They came to the following conclusion:

> A shared theoretical framework would guide the choice of constructs and their operationalization and, as a result, would introduce some urgently needed consistency in measurement practices. It would also suggest meaningful research questions and help organize research findings. Instead of correlating dozens of teacher stressors with dozens of symptoms and illnesses in hope of detecting statistical significance somewhere, future studies should test focused predictions based on a sound theory of teacher stress (p. 91).

Several models of stress exist that explain and describe the complex phenomenon of stress. Important aspects include stressors (such as situations, individuals, events or objects), emotions related to stress (such as anxiety, fear or anger), and ways of coping with stress (Malim & Birch, 1998). This section will review and critique four different models.

Response models (Selye, 1956). Selye is often referred to as the "founding father" of the concept of stress (Maslach & Schaufeli, 1993), because he originated the concept of stress and defined it as the body's physical responses to demands. His three-stage model General Adaptation Syndrome (GAS) describes that in the first stage (alarm), a perceived threat triggers the body's "fight or flight" responses. The second stage (resistance) is characterized by those immediate stress responses being maintained, even though with slightly decreased intensity. The third stage (exhaustion) occurs if the stressor is not removed and the physical responses do not return to normal. This can lead to a depletion of resources and eventually to burnout symptoms, because it impacts the autonomic nervous system.

This model seems overly simplified, because it does not take into account the cognitive component. Stress is seen as a bodily reaction of non-specific responses to stressors. The question of coping and prevention of stress is limited to a healthy diet, exercise, and tension control through body relaxation methods such as meditation or Yoga.

Stimulus models (Holmes & Rahe, 1967). Stimulus models focus on negative life events. Holmes and Rahe (1967) examined the impact of a number of life events and created the Social Readjustment Rating Scale (SRSS), which allowed them to measure the levels of stress associated with a range of life events from the most severe (e.g., death of spouse, death of a close family member, personal injury or illness) to less significant events (e.g., a change in eating habits, vacation, Christmas or a minor violation of the law). It is assumed that stress increases as the number of significant negative life events

increases. Additionally, a greater incidence of stress leads to a greater chance of physical illness.

This model does not include the cognitive component either, because the focus is on demands, or stimuli, but ignores reactions to them. Coping is limited to simply adapting to the life change. Another criticism of the SRSS includes the fact that it does not allow for measuring the impact of confounding variables such as individual circumstances. For example, individuals' responses to divorce may vary: One person may perceive it as a release, another person as a traumatic event.

Conservation of resources model (Hobfoll, 1989). This model includes personal and external resources that the individual perceives to have control over and that he or she is able to use in order to cope with stressors. It is based on the assumption that stress comes from a loss of resources. The emphasis in this model is less on the subjective evaluation of demands and resources and more on developing and maintaining resources. The research based on this perspective focuses on people who experienced large losses outside the normal range of human experience such as earthquakes, floods, war or severe car, train or plane accidents. It does not take into account daily hassles such as encountered in the teaching profession.

Transactional models of stress (Lazarus & Folkman, 1984). Lazarus (1966) suggested that daily hassles may cause more stress-related problems than major life events. According to transactional models of stress occupational and environmental demands can cause stress and lead to physiological, behavioral, and psychological stress symptoms. Stress results from perceptions of inequality between resources and demands. Individual appraisals of resources and demands mediate the stress response.

Perceptions are central to the stress response. Our thoughts about negative life events, demands, and changes impact our perceptions of resources and demands. Individual perceptions of those conditions as well as character traits play an important role. Kyriacou (2001) distinguishes between stress generated by difficult demands on the teacher (e. g., through disruptive student behavior) and stress related to the individual teacher's self-concept. O'Donnell, Lambert, and McCarthy (2008) found that individual teachers' perceptions of their resources and demands were a stronger indicator of stress than differences in environmental demands and resources between schools. Transactional models of stress as first proposed by Lazarus and Folkman (1984) can be considered best suited in examining teacher stress.

Personal work-related coping strategies. Equally in line with transactional models of stress and similar to McCarthy et al.'s (2002) model, some approaches to research on teacher stress and burnout put a strong emphasis on the dominance of variables related to individual personality characteristics. For example, the AVEM (Arbeitsbezogene Verhaltensmuster) developed by Schaarschmidt and Fischer (1996) focuses on personal coping strategies with work demands.

Expanded transactional model of stress and coping. Folkman and Lazarus (1988a; b) were the first ones who examined behaviors used to deal with stressors. They defined coping as

> all of the cognitive and behavioral efforts, constantly changing, expending (by one person) to manage the internal and/ or external demands perceived as consuming or exceeding his resources (p. 141).

Preventive coping resources. McCarthy et al. (2002) suggested that preventive coping resources play a crucial role in the development of teacher stress and burnout, because they allow for control over one's perception of demands as well as the appraisal of one's own capability to cope with those demands. Therefore, they need to be incorporated into the transactional model as described by Lazarus and Folkman (1984). Figure 1 shows that primary appraisal is directed towards demands and secondary appraisal towards available coping resources. The stress response is triggered by information from a combination of primary and secondary appraisal, namely if demands are perceived to be higher than resources.

Combative coping resources. Once the stress response has occurred, Lazarus and Folkman (1984) suggested two main forms of coping. Emotion-focused coping involves attempts to reduce negative emotions associated with stress. For example, the mitigating impact of social support as a coping resource has been well researched in a number of studies (Cieslak, 2006; Greenglass & Burke, 1993; Burke, Greenglass, & Schwarzer, 1996; Greenglass, Fiksenbaum, & Burke, 1995; Greenglass, Burke, & Konarski, 1997; Poschkamp, 2007). Other examples for emotion-focused coping are wishful thinking ("I wish I were a better teacher") or excessive worrying, which are considered as maladaptive, emotional ways of coping, because they are not goal-oriented.

Problem-focused coping includes strategies to reduce stressful situations by cognitive appraisal of causes and trying to find solutions by stress management techniques such as effective time management, exercise, and psychological techniques such as relaxation and cognitive restructuring (Malim & Birch, 1998). Goal setting or

planning would also be examples for problem-focused or instrumental coping (Schwarzer & Greenglass, 1999).

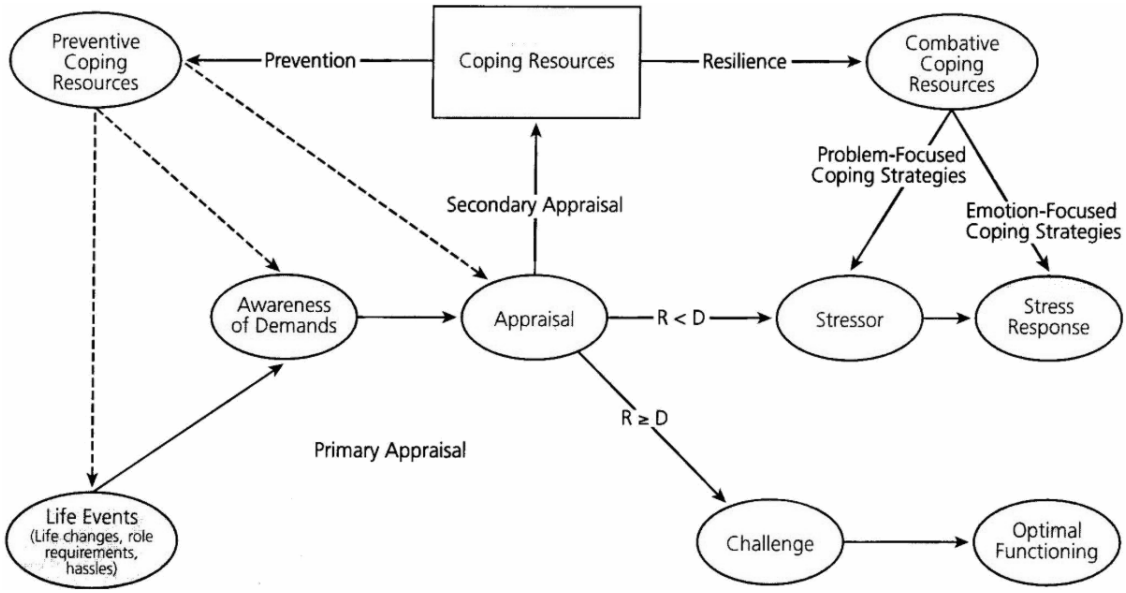

FIGURE 1. Hypothesized model of prevention in stress and coping (McCarthy, Lambert, Beard, & Dematatis, 2002, p. 27)

Rudow's (2000) model of stress and strain. Research in German speaking countries frequently uses Rudow's (2000) model of stress and strain. It is very closely related to and based on transactional models of stress, but emphasizes the distinction between stress and strain. According to Rudow (1999), strain (German: Belastung) is the perceived difference between subjective abilities and motives and objective work demands. Stress on the other hand (German: Beanspruchung) is the consequence of this process. Rudow's model of stress and strain is based on activity theory, which has its origins in East European psychology (Leontjew, 1982). Psychological activity theory as outlined by the Russian psychologist Leontjew (1982) differentiates hierarchically between three activity moments: a motive, which determines an activity; a goal, which

determines the action; and a condition, which determines the operation. Teacher activity is differentiated into individual actions, which are divided into individual operations. Those are carried out under distinct working conditions. Difficult circumstances related to curriculum requirements, poor school leadership or difficult relationships with students, parents or colleagues can lead to a loss of purpose. According to Rudow (1999) this can lead to an occupational identity crisis and can put highly motivated and talented teachers at risk for burnout.

Summary

Until the early 1980s, the phenomenon of occupational stress and burnout was exclusively examined in the U.S. Research on teacher stress and burnout has also been more extensive in the U.S. than in German speaking countries, however; the literature on teacher stress and burnout in both countries seems to be based on similar theoretical assumptions. A teacher's stress response is the result of multiple interacting societal, organizational, and individual factors. The first three models neglect a micro-level perspective, while transactional models of stress and coping incorporate the role of cognitive appraisal and of individual coping resources in this process. Rudow's model is based on the same assumptions but takes work demands more into account, thus focusing on actual demands, which can be measured independently from individual appraisal. This is an important distinction because research has shown that certain stressors that are specific to the teacher profession account for large portions of the variance in burnout symptoms (van Dick, Wagner, & Petzel, 1999). Among those are particularly administrative demands and discipline problems (Krause, 2002; Schaarschmidt, Kieschke, & Fischer, 1999). This model has been criticized because it does not consider

possible moderation effects through individual characteristics. Therefore, McCarthy et al.'s (2002) model can be considered as the most suitable in investigating teacher stress and coping. The next section provides findings from previous research on teacher stress and burnout. The existing literature on stress and burnout in teachers was reviewed as it relates to the purpose of and predictor variables in the present study.

2.2 Review of the Literature – Stress and Burnout in Teachers

At the risk of sacrificing coverage for depth, this chapter only presents the findings from research that is directly related to and that supports the importance of the predictor variables for teacher stress and burnout that will be included in this investigation. Three conceptually different dimensions were identified that that have been associated with stress and burnout in teachers. Those three major dimensions are cultural and societal factors, school-specific stressors, and teacher-specific factors.

2.2.1 Impact of Culture and Society

Cultural influences as well as societal and political factors have an impact on the school environment and can play a role in the development of teacher stress and burnout. An example for a general societal factor that may contribute to the development of teacher stress and burnout is the lack of public respect and recognition for the teaching profession. Teaching has moved from a profession characterized by high value and appreciation to one characterized more by constant criticism and blame (Shoho, 2002).

Even though teaching is a profession that is relatively comparable across different countries and cultures and has very similar features, culture is an environmental variable that impacts individuals' perceptions and their behaviors in distinct ways (Hofstede, 1980; Savicki, 2001). Characteristic cultural factors include differences in language,

geography, political system, and historical development. The United States and Germany are different from each other in terms of all those factors. Based on cultural differences, individuals may differ in their responses to daily concerns and hassles as well as in their choice of coping strategies. Hofstede (1980) measured work values across 40 different cultures and 60,000 participants and identified four cultural factors related to work. These were (a) individualism vs. collectivism, (b) masculinity vs. social consciousness, (c) high power distance vs. low power distance (more collaboration), and (d) high uncertainty avoidance (many rules) vs. low uncertainty avoidance.

The United States and Germany have been shown to differ on work values. For example, Savicki and Illner (1997) found in a study of human service workers in agencies providing care for children with emotional and behavioral difficulties in the United States (n = 97) and in East Germany (n = 98) that for German participants lower individualism (collectivism) was positively related to Emotional Exhaustion (EE), higher masculinity (less social consciousness) was positively related to Depersonalization (DP), and comfort with authority (higher power distance) was related to lack of Personal Accomplishment (PA). This means that German participants were more likely to develop burnout symptoms if they subscribed to work values that emphasized collective action, social-consciousness, and a supervisor who encouraged participative decision-making. An important difference was that participants from the U.S. sample scored higher on EE if they scored lower on collectivism. Overall, the U.S. sample scored higher on all burnout scales including total burnout.

Using discriminate analysis, Savicki and Illner (1997) showed in a cross-cultural comparison that the same U.S. and German samples were significantly different on work

values. Major contributors were high Individualism for U.S. participants and low Masculinity for German participants. Cultural value ratings contributed significantly to burnout predictions.

In a later study Savicki (2002) found differences between the former East and West Germany. After 40 years under the Communist regime in the former East, social consciousness was linked with acceptance of a more distant leader and an expectation that workers would be told what to do, rather than expressing individuality or initiative.

Cross-cultural studies. Few studies have compared the impact of culture on burnout. These studies fall into two categories: Methodological studies seeking to confirm the factor structure of the MBI (Schwarzer, Schmitz, & Tang, 2000) and cross-cultural comparisons on different occupational groups. For example, using Hofstede's (1980) Cultural Work Values scale (CWV; Hofstede, 1980), Savicki (2001) conducted a study in which he compared stress, coping and burnout dimensions in child and youth care workers across 13 cultures. Hierarchical linear regression analyses showed that higher uncertainty avoidance added to predictions of EE and DP, while higher individualism contributed to the prediction of PA. Scores on PA were higher for a sample of 97 U.S. youth care workers than for a sample of 98 youth care workers from Eastern Germany, scores on DP were lower in the U.S. sample than in the German sample, and scores on EE were slightly higher in the U.S. sample than in the German sample. A configural analysis of burnout placed a Western German sample in the "more high and than low burnout configurations" group and the U.S. sample in the "low and high burnout configurations equal" group (Savicki, 2001).

In a study of a sample of 949 German teachers (Hauptschule/ Gymnasium), Unterbrink et al. (2007) compared mean burnout values of with previous studies and a sample from China and found higher burnout rates in the German sample. The scores of the German teacher sample were higher than in a Chinese sample on EE (25.91 vs. 22.37) as well as on DP (8.912 vs. 6.36). Unterbrink et al. (2007) found that the German teacher sample scored higher on EE (25.91) than a mixed U.S. sample of professionals in psychosocial fields (20.99) as well as an American teacher sample (21.25) (Maslach, Jackson, & Leiter, 1996). But they found lower scores in DP in the German teacher sample (8.91) than in the U.S. teacher sample (11.00). For PA, lower mean values on PA (33.84) were found in the German sample than in the mixed profession U.S. sample (34.58), but there was no significant difference to the U.S. teacher sample (33.54), and the PA mean values were higher than in a Chinese teachers sample (29.79) (Schwarzer et al., 2000). Based on those comparisons, German teacher samples seem to be more affected by stress and burnout. Unterbrink et al. (2007) suggest the increase of challenging student behaviors may be among the most important stressors that contribute to this situation.

Differences in educational systems. An intercultural comparison and analysis of demands on teachers must also take differences regarding educational systems or school types into account. Culture has an impact on the organization of educational systems (Krause, 2002). Compared to the education system in the United States, which is based on the idea of educating all students in integrated kindergartens, elementary schools, and comprehensive middle and high schools, Germany has a stratified school system. After the fourth elementary grade, children get separated from one another on the basis of

failure and success (Powell, 2006). There are different types of schools that offer specific levels of qualifications, and based on academic performance in most "Länder" children get selected to either attend basic secondary schools (grades 5 to 9: Hauptschulen), general level schools (grades 5 to 10: Realschulen), or advanced secondary schools (grades 5 to 12: Gymnasien). Hauptschulen lead to the lowest of all German school diplomas and prepare students for learning a trade (Unterbrink et al., 2007). Realschulen lead to a general diploma and prepare students for learning a trade as well; however, with a Realschul-Diploma, students are better able to get a job than with a Hauptschul-Diploma. They are also able to go on to obtain a university entrance diploma at a Gymnasium-equivalent school, e.g., with a technical focus. But the Realschule does not prepare students for a secondary education at the college or university level. Gymnasien are schools that focus on preparing students for university and comprise grade levels 5-12. In addition to the general education system, 10 different types of special schools exist for students with disabilities (Kultusministerkonferenz, 2005). In Germany, 4% of all students between 6 and 15 years old attend special schools (Döbert, 2007).

While the United States has a universal secondary school system with some degree of intra-school separation or stratification occurring via tracking, the German school system is hierarchically stratified and is characterized by inter-school segregation (Powell, 2000; 2003 a, b; 2004 a, b). Homogeneous learning groups are constructed in different types of schools (Werning, Löser, & Urban, 2008), which is the most important institutional distinction between the two school systems. It has been criticized repeatedly, especially because it is difficult to make decisions about a child's educational career for a 10 year old child (Döbert, 2007). It has been shown that it leads to inequities for students

from families with lower socioeconomic status or immigrant background who are overrepresented in special schools as well as in Hauptschulen and underrepresented in Realschulen and Gymnasien. According to Baumert and Schümer (2001), findings from the first study within the Program for International Student Assessment (PISA) showed that students with parents who had some level of higher education were four times more likely to be selected to attend an advanced secondary school (Gymnasium). According to the German Federal Bureau of Statistics (Statistisches Bundesamt Deutschland, 2008), only 8.9% of students with an immigration background achieve an advanced high school and university entrance diploma (Abitur) in contrast to 24.3% of native German students.

According to Koch (2004) students in special schools were four times as likely to have parents who did not have an advanced high school diploma. In this study, 32% of the fathers and 50% of the mothers of a sample of 1,986 students from special schools were unemployed. Additionally, 58.6% of the students were from families who had less than half of the average net income typical for Germany.

Based on these findings, Werning, Löser, and Urban (2008) describe the educational school system in Germany as inherently discriminatory. Gomolla and Radtke (2002) use the term "institutional discrimination." The highly differentiated structure of the German school system may contribute to an accumulation of students with a wide variety of difficulties in the lower level school types (Dravenau & Groh-Samberg, 2004).

Even though inclusive concepts of schooling have been discussed for the last 30 years, changes have occurred only in the form of projects, but are not yet reflected by structural changes. As of 2003, approximately 95% of all students with special needs in Germany attended special schools, while only 12.9% of students with special needs were

educated in inclusive settings (Kultusministerkonferenz, 2005). In the United States, 87% of students with special needs attend regular schools and most of them spend some of their school day in separate classes (Powell, 2008).

Differences in school leadership training. Differences in educational systems also include differences in school leadership training. In Germany, teachers apply for leadership positions and grow into the related tasks through learning by doing. Formal training is not obligatory, which has been criticized because principals need a range of personal, pedagogical, and managerial skills if they want to be effective leaders. Hancock and Müller (2008) found that each of the 16 Länder in Germany offer courses for professional development for principals, but largely diverse qualification programs are in place. Differences concern the duration of the training (from 8 weeks to 2 years), requirements, goals, content, and methods (Huber, 2003, p. 279). Qualification on a Master's degree level is not obligatory and if at all, usually occurs post taking office. According to Hancock and Müller (2008), only a few universities offer a Master of Arts in school management, e.g., the University of Kaiserslautern, the University of Potsdam in Brandenburg, and the Pedagogical University of Ludwigsburg.

The United States can look back on a long history of further refining and developing principal education programs. A National Policy Board for Educational Administration (NPBEA) has outlined standards for the professional development of aspiring school leadership candidates (Hancock & Müller, 2008). Principal education occurs according to well defined and certified programs of study for a period of 1 or 2 years of full time study or up to 4 years of part-time study leading to a Master's Degree in School Administration. Content includes knowledge on methods such as coaching and

problem-based learning, e.g., through the use of case studies. There is also a strong emphasis on internships alongside experienced school leaders within schools.

Research on impact of school leadership. The literature clearly shows that challenging demands will not lead to stress and burnout in teachers if school administrators have the ability to create a supportive environment (Blasé & Blasé, 2000; Dorman, 2003; Kyriacou, 2001; Leithwood, 1999). Timms, Graham, and Caltabiano (2007) showed that burnout in teachers was related to trustworthiness of administrators. Trustworthiness was defined as ability, benevolence, and integrity. Dworkin, Saha, and Hill (2003) emphasized the important role of effective school leadership and creating a supportive school culture in reducing teacher stress.

Summary

Culture and society have an impact on teacher stress and burnout. Culture may therefore affect the relationship between burnout and its precursors and is influential both at a personal and an environmental level. Differences in historical development between the U.S. and Germany, characteristics of educational systems, leadership training and the prevailing values and attitudes related to teaching and learning, and societal beliefs in general have an impact on sources of teacher stress.

According to Savicki (1999) cultural factors are related differently to the burnout dimensions. He conducted a study on youth care workers and correlated societal and cultural factors with stress and burnout levels. He found that a German sample of youth care workers scored higher on the burnout measure MBI. According to Unterbrink et al. (2007), a German teacher sample scored higher on EE (25.91) than a U.S. teacher sample (21.25), lower on DP (8.91/ 11.00), and no difference was found in PA (33.84/33.54)

(Unterbrink et al., 2007). Beyond simply comparing how participants from different cultural backgrounds differ on the MBI, the relationship between societal and cultural variables and teacher stress and burnout has not been paid much attention.

2.2.2 School-specific Factors

Culture, societal context, and educational system are important factors in predicting teacher burnout. Type of school, grade level, and number of students in a classroom are school-specific stressors and variables that have been well researched and found to be related to teacher stress and burnout (Burke & Greenglass, 1989). Characteristics for the teaching profession are also interactions with students and parents that may potentially be difficult and prone to conflict.

2.2.2.1 Type of School

Some researchers have focused on investigating the impact of type of school on teacher stress. In the U.S., Shoho (2000) found in a study of 223 special education teachers and 393 general education teachers that high school teachers and elementary teachers were less burned out than middle school teachers. The causes for this finding may, according to Shoho (2000), be the onset of adolescence and the associated physiological and emotional changes in middle school students.

In Germany, Nübling et al. (2005) found that the percentage of teacher stress and burnout was higher for Hauptschulen than for other school types. Unterbrink et al. (2007) found also that a sample of 523 teachers in Hauptschulen had higher scores on EE, lower scores on DP, and lower scores on the reward they felt as measured by the Effort Reward Imbalance Questionnaire (ERI; Rödel, Siegrist, Hessel, & Brähler, 2004) than a sample of 949 teachers in Gymnasien. Finally, Bauer et al. (2007) found that the percentage of

challenging student behavior was significantly higher for a sample of 435 teachers in Hauptschulen (53.2%) than for a sample of 426 teachers in Gymnasien (29.6%). This finding may be related to the stratified school system in Germany resulting in the tendency of parents to prevent their children with special needs from attending a special school. In addition, students whose academic performance in Realschulen is too low are sent to Hauptschulen.

There is considerable variation in findings of studies that aimed at comparing special and general education teacher stress levels. Some studies report lower levels of stress for special educators (Shoho, 2000) and some note no differences (Billingsley & Cross, 1992). Wisnewski and Gargiulo (1997) found in their review of literature that among teachers of students with emotional or behavioral difficulties, special education teachers had significantly higher scores for job-related stress. Nelson et al. (2001) also reported that teacher attrition is particularly high for teachers who work with students with emotional and behavioral disabilities (Nelson et al., 2001). Firth, Frydenberg, and Greaves (2006) found that it is not the academic needs of students with disabilities that cause teacher stress, but rather the problem behaviors that occur in response to academic frustrations. They suggest that these problems are particularly evident for teachers of students with emotional or behavioral disabilities.

Male and May (1997) conducted a survey of 221 secondary special education teachers from eight local education authorities in the Southeast of England. Very similar to the purpose of the present study, the research questions in this study were related to burnout levels in special education teachers and to sources of stress. The targeted sample included seven regular schools (randomly selected out of 56 schools) and 24 special

schools. Among those were eight schools for students with emotional and behavioral difficulties (EBD), eight schools for students with moderate learning difficulties (MLD), and eight schools for students with severe learning difficulties (SLD). A total of 221 teachers responded: 82 special education teachers working in general schools, 42 EBD teachers, 40 MLD teachers, and 57 SLD teachers.

The authors used a questionnaire comprised of three sections. The first part assessed biographical data. In the second part on job-related feelings, teachers were asked to identify the most intense sources of stress at school and how they felt when they were stressed. In this section, participants also completed the MBI (Maslach, Jackson, & Schwab, 1986). The third part evaluated their work overload using 10 items designed to indicate the extent to which work overload was encountered as a source of stress. Open-ended questions that asked teachers to identify the most intense source of stress in their jobs were also included.

Results showed that the total degree of burnout was not high, but high ratings on EE were found for special education teachers in all four types of schools. Additionally, MLD teachers scored low on PA which fell within the high burnout level category, and SLD teachers' scores on PA fell in the average/high burnout level category. SEN, MLD, and SLD teachers' mean scores for DP were close to the low end of the scale, which put them in the low burnout level category. EBD teachers' scores on DP fell in the average burnout level category.

The second part of the study yielded 25 distinct categories of stress sources using content analysis. Most important sources of stress were workload/ lack of time and challenging student behavior with 33% of SLD teachers, 28% of MLD teachers, and 21%

of ordinary school teachers indicating this as a source of stress. With 66%, EBD teachers cited challenging student behavior most often. Male and May (1997) found that teachers of children with special needs are more prone to stress and burnout because of the need for individual attention, the need for empathy, and limited successes.

Summary

Research has found that in the United States, stress levels in teachers may be higher in middle school teachers and special education teachers than in elementary and highschool teachers (Male & May, 1997). They are also high in German Hauptschulen. Bauer et al. (2007) suggested that in Hauptschulen teachers may be confronted with a higher degree of challenging behaviors based on the fact that students in Hauptschulen often come from families with lower socio-economic status. Some of the problems in German Hauptschulen may be related to the fact that many parents push for their children with special needs to be placed in Hauptschulen instead of special schools.

There is also substantial evidence in the literature that teacher burnout is more prevalent in high school than in elementary teachers. On the other hand, van Dick et al. (1999) found lower social support among teachers in Gymnasien. Social support can serve as a buffer against perceptions of stress (Greenglass, 2002), while conflicts with colleagues have been found to correlate significantly with teacher stress (Krause, 2002).

2.2.2.2 Characteristics of the Teaching Profession

The teaching profession can be characterized by certain features that are inherently stressful (Rothland & Terhart, 2007). For example, teachers have very little "down-time" during their school day and spend the majority of their time with students and feel isolated professionally (Goldstein & Noguera, 2006). Teachers also face

potentially stressful encounters with students, parents, administrators, support personnel, and other teachers. Relationships with students are not really reciprocal, because students are not equal partners. According to Krause (2002) dysfunctional interactions between teachers, students, and parents may have a very high priority in causing stress in teachers compared to other variables.

Research on challenging parent behavior. Bauer et al. (2006) found that 43.1% of a German teacher sample reported parental complaints within the last 12 months and 21% reported accusations. Markov and Martin (2005) interviewed via phone a total of 800 public school teachers in the U.S. who had 5 or less years of experience in teaching. Data were weighted to key demographic variables to obtain a nationally representative sample of K-12 teachers. They found that 33.1% of new teachers viewed interactions with parents as their greatest challenge, compared to 22% who mentioned getting sufficient resources as most challenging, and 20% who reported classroom management as the greatest challenge. Challenging parent behavior included interruptions of instructional activities, parental dissatisfaction, high expectations, and unwillingness to collaborate.

Twenty percent of new teachers reported a somewhat or very unsatisfying relationship with parents and 24% felt that they were not prepared for the responsibility of communicating with and involving parents. New teachers were also twice as likely to indicate that working with parents was challenging to them (31%) as compared to only 14% reporting that their instructional responsibilities (14%) were challenging. Teachers, who indicated their intention to leave the teaching profession, were more likely to be unsatisfied with parent relationships (32%) than others intending to remain in the profession (17%).

Using a 5-point Likert scale questionnaire (van der Wolf & Everaert, 2000) based on the 11 types of challenging parent behaviors identified by Seligman in his book "Conducting Effective Conferences with Parents of Children with Disabilities" (2000), van der Wolf and Everaert (2005) conducted a study with 121 Dutch elementary teachers. Using principal component analysis, they found 7 types of challenging parent behavior to be significant. Those were perfectionist parents, unsatisfied parents, uncooperative parents, neglectful parents, overprotective parents, uninvolved parents, and fighting parents. Hostile parent behavior, parents as professionals, dependent parents, and overly helpful parents could not be confirmed in the Dutch sample; however, unsatisfied parents emerged as an additional parent behavior category.

Using the same questionnaire by van der Wolf and Everaert (2000), Prakke, van Peet, and van der Wolf (2007) conducted a Multiple Group Confirmatory Factor Analysis in six countries. For the U.S. sample, they found the same 7 types of challenging parent behavior again. Neglectful and fighting parent behaviors were reported very rarely and therefore were not included in further analyses.

Prakke and van Peet (2008) reported the following percentages for challenging parent behaviors as derived from the 24 items scale that measured the incidence of challenging parent behavior experienced by teachers for the U.S. sample. Uncooperative parent behavior was reported most often (33.7%) and was followed by overprotective parent behavior (17.5%). Unsatisfied parent behavior had the lowest frequency (15.9%). The least stress was experienced from unsatisfied and by perfectionist parent behaviors.

Uncooperative parent behavior included not showing up to parent-teacher meetings or being unwilling to assist their child with homework. The overprotective

parent is excessively concerned about the wellbeing of the child. The uninvolved parent initially agrees to collaborate with the teacher and to support the child, but does not follow through.

Research on challenging student behavior. There is consensus in the literature that handling difficult student behavior is an important source of teacher stress. Previous research using the CARD found that teachers indicated higher levels of stress if they taught a higher number of children with challenging behaviors or special needs (Lambert, McCarthy, O'Donnell, & Melendres, 2007; Gallagher & Lambert, 2006). The following review of seven peer-reviewed studies on the relationship between challenging student behavior and teacher stress and burnout included only studies that used the MBI to measure burnout. Use of the MBI as an instrument was chosen as a criterion in order to allow for a higher degree of parallelism in the review of studies. The first two studies examined the relationship of challenging student behavior and burnout. The next 3 studies look at the moderating impact of the variables attributions of behavior and preferred practices (Bibou-Nakou, Stogiannidou, & Kiosseoglou, 1999), competence to cope with student behavior (Evers, Tomic, & Brouwers, 2004), and psychological coping (Hastings & Brown, 2002). Finally, the last 2 studies investigated the impact of personality factors on the relationship between challenging student behavior and burnout (Kokkinos, Panayiotou, & Davazoglou, 2005; Kokkinos, 2007).

Friedman (1995) investigated the effects of student behavior (IV) on burnout among teachers (DV) in a survey of 348 elementary teachers from 12 schools in Israel with a return rate of 62%. Results from a multiple regression analysis showed that all three student behavior patterns made a significant contribution to the prediction of

burnout: Disrespect (15%), inattentiveness (6%), and sociability (1%) accounted for 22% of teacher burnout variance.

The second study described in the same article by Friedman (1995) investigated the effects of student behavior (IV) on burnout (DV) as well. Surveyed were 391 elementary and secondary teachers. Of those, 151 (39%) were elementary teachers and 240 (61%) were high school teachers. The gender break up was 28% for male participants and 71% for female participants. A multiple regression analysis showed that all three behavior patterns accounted for 15% of the variance in teacher burnout. But again disrespect was the strongest predictor (11%) followed by attentiveness (4%). Sociability did not make a significant contribution.

Hastings and Bham (2003) corroborated the findings from Friedman's (1995) research in a partial replication study. They explored the properties and construct validity of the Pupil Behavior Patterns (PBP) scale (Friedman, 1995) using an exploratory factor analysis which confirmed the domains of disrespectful behavior, sociability, and attentiveness of the PBP. The sample consisted of 100 British elementary teachers from 33 schools in South England. Testing prediction of burnout dimensions from dimensions of student behavior, they conducted a regression analysis and found that disrespect predicted EE and DP burnout and lack of sociability predicted both DP and PA burnout. The pattern of prediction was different to the one found in the study of a sample from Israel as conducted by Friedman (1995).

Two methodological differences do not allow for the conclusion that the impact of challenging student behavior on teachers from those two different cultures is perceived differently. First, Friedman (1995) used an adapted version of the MBI, which did not

include the DP component. Second, in this study the effects of challenging behavior on teacher burnout are independent from demographic and work variables that were controlled for in Hastings and Bham's (2003) study. Finally, the actual percentage of teachers who display burnout symptoms may be higher. Based on the relatively low response rate of 33%, it can be assumed that the sample may have been biased towards teachers who experienced lower levels of burnout. In order to explore possible cross-cultural differences, replication studies using identical measures and bigger sample sizes are needed.

Attributions of behavior and practices employed as moderators. In addition to demographic and work variables there may be other variables that moderate the effect of challenging student behavior on burnout in teachers. The next three studies reviewed investigated the impact of such factors. Bibou-Nakou et al. (1999) investigated if teacher attributions of challenging student behavior and preferred practices (IV) predicted burnout levels (DV). They surveyed 200 elementary teachers in Northern Greece. The following challenging student behaviors were assessed: (a) disobedience, (b) playing the clown, (c) disturbance of others, and (d) off-task behavior.

Teachers' causal attributions were assessed by a three-factored questionnaire: (a) teacher-related explanations, both internal (e.g., teacher personality traits or mood) and external (e.g., teaching experience) with variance accounted for from 34.2 to 40 percent, (b) external student-related explanations (e.g., tired student, situation-specific behavior) with variance accounted for from 16.1 to 18.5 percent, and (c) internal student-related attributions (e.g., student personality and family background) with 12.6 to 14.7 percent of

variance accounted for. Thus, teacher-related explanations accounted for more of the variance than student-related explanations.

Disobedience and off-task behavior were found to be the most often reported challenges in the classroom. The most frequently applied explanation for challenging student behavior were internal student-related attributions. Teacher-related attributions were mentioned least often. As for practices employed by teachers, the use of neutral actions was indicated most often and the use of punitive practices was reported least often.

Using *t*-tests, the authors assessed the relation of teachers' attributions for the classroom behavior to the levels of teacher burnout. Results showed that external student-related attributions were associated with lower scores on DP for disobedience, disrupting others, and off-task behaviors. Internal student-related attributions were related to higher scores on EE for disrupting others. Teachers, who attributed disobedience to internal student-related factors and playing the clown to external student-related factors also scored higher on PA. The more teachers favored social-integrative actions (asking peers for help) as compared to punitive practices (e.g., removal from class) or neutral practices (observation), the lower they scored on DP. The use of punitive practices was also related to lower scores on PA.

Competency to cope as moderator. While results from this study showed that practices employed by teachers moderate the effect of challenging student behavior on burnout in teachers, Evers et al. (2004) focused on the effects of challenging student behavior and teachers' competence to cope with challenging student behavior (IV) on students' and teachers' perceptions of teacher burnout (DV) in a Regional Training

Center (RTC) in the Netherlands. A random sample of 25% of the classes (17 out of 69) participated in the study (411 out of 1,782 students). Participants were 38.7% female and 61.3% male. Their mean age was 18.3 years, ranging from 16-23.

Out of 73 teachers who taught in those 17 classes, 41 teachers participated in the study (response rate 56.2%). Of the participants 78% were male and 22% were female. Their mean age was 49.07 years, ranging from 34-65. The survey package included the MBI, the Coping with Disruptive Behavior Scale (CDBS; 12 items, maximum score 60; Emmer & Hickman, 1991), and the Perceived Disruptive Behavior Scale (PDBS; 5 items, maximum score 25; adapted from Moos & Trickett, 1974).

No differences between teachers and students' scores on EE were found, but students perceived their teachers to be closer to displaying symptoms in the DP and PA dimension of burnout than teachers themselves did. There were also significant differences in students' and teachers' scores on competence to cope with disruptive student behavior (students' mean 34.44/ teachers' mean 44.87). Results of a hierarchical linear regression analysis showed that according to students' perceptions variance in all three burnout dimensions could be explained by teachers' competence to cope with disruptive behavior.

Psychological mechanism of coping as moderator. For the first time in the literature, Hastings and Brown (2002) explored the moderating effect of a psychological mechanism (maladaptive coping) between burnout and challenging behavior. Hastings and Brown investigated if maladaptive coping strategies moderate the impact of exposure to challenging behaviors on burnout. Hastings and Brown (2002) surveyed 27 special education teachers and 28 support staff members from three schools for children with

mental retardation in England with a response rate of 61%. The age of the students they taught ranged from 7 to 19 years. Data were collected using a self-report questionnaire consisting of four sections: (a) Demographic information, (b) a measure of exposure to challenging behaviors (aggression directed towards them, witnessing aggression towards others, witnessing self-injury, and witnessing aggression towards objects), (c) strategies employed to cope with challenging behaviors measured by a Carver's (1997) version of the COPE inventory which encompasses 14 subscales representing a broad range of coping strategies. Two scores were derived from the COPE: One for (a) ratings for adaptive coping strategies such as active coping, planning, positive reframing, acceptance, humor, religion, emotional or practical support and one for (b) maladaptive coping strategies such as self-distraction, denial, venting, self-blame, substance use, and behavioral disengagement, and (d) burnout (measured by the MBI - Educator Survey; Maslach, Jackson, & Leiter, 1996).

Three linear regression models for EE, DP, and for PA were used to analyze the data. For EE, being exposed to challenging behavior and maladaptive coping strategies had significant main effects and there was a statistically significant interaction effect between these two variables as well. Main effects of exposure and maladaptive coping with challenging behavior were found for DP as well, but there was no main effect for adaptive coping and no significant interaction effects. The regression model for PA was not significant. This finding suggests that there may be other factors that are related more strongly to the PA component of the burnout syndrome.

Participants who indicated high exposure to challenging behaviors and high use of maladaptive coping strategies, had the highest levels of EE. This means that coping

strategies may potentially moderate the impact of challenging behavior and burnout symptoms in teachers. The authors suggested that in order to build a more comprehensive model of the relationship between challenging behavior and teacher burnout, future research needs to consider the effect of other moderating variables such as occupational and personality ones as well as support and teachers' self-efficacy beliefs. Hastings and Brown (2002) were the first ones who empirically confirmed the moderating effect of the psychological mechanism coping between burnout and challenging behavior.

Effects of teacher burnout on perceptions of student behavior. Teachers who are burned out may exacerbate challenging student behaviors. The purpose of a study conducted by Kokkinos et al. (2005) was to assess whether burnout, personality, gender, and teaching experience (IVs) are associated with the perceived severity of 24 undesirable student behaviors (DV) among experienced (burnout measured) (IV) and trainee teachers (personality measured) (IV). The impact of burnout on behavior appraisal was examined with a sample of 465 primary school teachers in Greece. The effects of personality were examined in a sample of 141 undergraduate students in Greece, of which 88% were female and 12% were male.

Instrumentation included the Pupils' Undesirable Behaviors Questionnaire (PUBQ) developed for the purpose of this study. This questionnaire consists of 24 items representing six broader categories of anti-social acts, defiant behavior, socially provocative behavior, inattention, hyperactivity, and negative affectivity. The MBI-ES was used to assess teacher burnout levels (Maslach et al., 1996). Personality was measured by the NEO-Five Factor Inventory (Costa & McCrae, 1992), which consists of five scales: Neuroticism (susceptibility to psychological stress, inability to control urges,

inability to cope with stress), extraversion (disposition towards positive emotions, sociability, and high activity), openness (proclivity towards variety, intellectual curiosity, and aesthetic sensitivity), agreeableness (inclination towards interpersonal trust and consideration of others), and conscientiousness (tendency towards persistence, industriousness, and organization). Means on the MBI subscales were lower than for the U.S. standardization sample of 4,163 teachers reported by Maslach, Jackson, & Leiter, 1997), especially on EE and DP.

A Multivariate Analysis of Variance (MANOVA) was used to examine effects of teacher burnout (between-subjects variable) on teacher appraisals of student behavior (DV). Results showed that burnout had a significant effect on the severity ratings of antisocial and oppositional/ defiant behaviors. Severity ratings of students' undesirable behaviors were also associated with high levels of conscientiousness and neuroticism.

The authors concluded that future research on teacher burnout should address the interaction between teacher burnout and teacher personality. They also recommended cross-cultural validation research using replication studies and investigating the impact of other mediator variables such as coping resources, social support or self-efficacy.

In a later study Kokkinos (2007) surveyed primary school teachers in Greece (79.3% female and 20.7% male) and examined the association between job stressors, personality, and burnout. The purpose of this study was to clarify the role of environmental and personality variables in predicting teacher burnout. Additionally, the study sought to identify the most important predictors of each burnout dimension.

From a total of 1000 surveys that were delivered to schools, 447 teachers participated in the survey and sent the questionnaire back to the author, which yielded a

response rate of 44.7%. Measurement instruments were a 63-item scale to measure sources of job stress, the MBI-ES, and 40 items of the NEO-FFI. Regression analyses showed that personality and job stressors were associated with burnout dimensions, but managing student behavior and time constraints explained for the most variance in the EE component of burnout. DP was predicted by stress arising from managing student misbehavior and low scores on conscientiousness. PA was mainly predicted by the personality variables conscientiousness, extraversion, and neuroticism. Overall, results showed that EE and DP were more related to environmental stressors and PA more to personality variables. Correlation analyses showed that personality variables (conscientiousness, neuroticism, extraversion, and openness) and seven out of 18 job stressors (students' behavior and managing student misbehavior, appraisal of teachers by students, work overload, appraisals of teachers, time constraints and specific teaching demands) were correlated with all burnout dimensions. This study adds to the body of research on teacher burnout because of its unique way of looking at the impact of personality and environmental factors.

Summary

This review on the impact of challenging student behavior on teacher burnout confirms the hypothesis that behavior problems are often perceived as being the most stressful component of the classroom environment contributing to teacher burnout. Results from the study by Friedmann (1995) conducted in Israel have shown that the statistical variance accounted for by the three challenging student behaviors of disrespect, inattentiveness, and sociability in both studies was not very high (ranging from 15% - 33%). This means that other variables play an important role as well, which need further

investigation. If student behavior is really a main source of teacher burnout, a higher amount of statistical variance could have been expected. Friedman (1995) interpreted this as an indication for other influential factors which were not taken into consideration in his study.

Different from the findings in Friedman's (1995) study, Hastings and Bham (2003) found in their partial replication study in England that disrespect predicted EE and DP and sociability predicted DP and PA. This difference in findings may be due to methodological differences. Therefore, future research that intends to explore cross-cultural differences should consider replication studies using identical research designs and comparable representative sample sizes.

Another issue both in Friedman's (1995) and in Hastings and Bham's (2003) study is the problem of shared method variance, which refers to the association between two or more constructs due to the method used, i.e., teachers were assessed both on their perceptions of student behavior and on their own levels of burnout. Future research should employ more independent measures of student behavior such as reports from other persons involved in the classroom and observational data.

Several factors have been researched that seem to mediate the critical impact of challenging student behavior on teacher stress and burnout. Three studies were reviewed that looked at the moderating effect of other variables between teacher stress and burnout and challenging behavior. Bibou-Nakou et al. (1999) found that external student-related attributions of challenging student behavior were associated with lower scores on DP, while internal student-related attributions of challenging student behavior were associated with higher scores on EE. Lastly, practices employed by teachers in dealing with student

behavior moderated the impact of challenging student behavior and level burnout: Social-integrative actions were related with lower scores in DP and punitive practices were related with lower scores on PA.

Next, Evers et al. (2004) found that students' perceptions of their teachers' burnout levels differed significantly from teacher perceptions: Students' scores were higher on DP and lower on PA. In addition, the variance in all three burnout dimensions could be explained by teachers' competence to cope with challenging student behaviors. Finally, Hastings and Brown (2002) found that exposure to challenging behavior and maladaptive coping predicted the burnout dimensions EE and DP. This study was the first of its kind to address the role of coping. The authors concluded that a more comprehensive model of the relationship between challenging student behavior and burnout is needed.

Findings from Friedman's (1995) study showed that the same stressors (e.g., inattentiveness or disrespect) can affect teachers with different characteristics differently (gender, behavior management beliefs, etc.). Hypothetically, it could very well be that challenging student behavior is caused by teacher stress and burnout which is caused by factors other than student behavior. More research is needed that explores the impact of student behavior on teacher burnout in combination with personality and organizational factors. This is precisely what Kokkinos et al. (2005) accomplished. They used burnout as an independent variable and found significant effects on the severity ratings of challenging student behaviors. Using student behaviors as dependent variable, they also found an association between severity ratings of students' undesirable behaviors and personality traits (high levels of conscientiousness and neuroticism). They concluded that

the variables burnout and personality provide a lens through which teachers' appraisal of challenging student behavior can be seen. Finally, Kokkinos (2007) took personal and environmental factors into account and found associations between personality and job stressors, while student behavior and time constraints accounted for most of the variance in EE and in DP.

According to Lens and Jesus (1999) who interpret teacher stress and burnout as a psychosocial phenomenon, both teacher-specific variables and school characteristics need to be taken into account. While the important role of school-level variables has already been reflected by the studies reviewed in previous sections, the next section provides findings from the literature on the distinct role of teacher-specific variables related to teacher stress and burnout.

2.2.3 Teacher-specific Variables

A number of research studies have examined the impact of individual characteristics on teacher stress and burnout. For example, Schaarschmidt and Kieschke (2007) found that personality factors and coping strategies accounted for the most part of the variance in teacher stress. As the previous section already revealed, factors specific to teaching as well as individual factors have an impact on the development of teacher stress and coping. The following section provides findings from the literature that were found to play important roles. They are demographic variables, individual characteristics, and coping resources.

2.2.3.1 Demographic Variables

Gender. In terms of gender, results are contradictory. Horn, Schaufeli, Greenglass, and Burke (1997) reported that male teachers scored higher on EE and DP.

Many studies reported no differences or higher rates of stress and burnout in female teachers (Körner, 2003). Schmitz (2001) reported higher scores on EE for female teachers and higher scores on DP for male teachers.

Age. Findings on the impact of variables such as age, gender, marital status, and teaching experience are mixed. Körner (2003) concluded from a review of the literature that no clear findings in terms of significant differences in age have been found related to burnout rates among teachers (Körner, 2003). Since age does not appear to be a weighty factor in predicting teacher stress and burnout, it was not included as a variable in the present study.

Years of experience. Teaching experience seems like an interesting and important variable in the stress and burnout process. Schwarzer and Greenglass (1999) refer to it as an "internal coping resource;" however, research has yielded inconsistent findings. Therefore it was included as a predictor variable in this investigation.

First-year teachers have named a higher number of stressful situations in teaching (Dann, Müller-Fohrbrodt, & Clötta, 1981; Veenman, 1984; McCarthy et al., 2006). Forlin (2001) found a correlation between years of experience in teaching and ability to deal positively with challenging student behavior and as a consequence reduced levels of perceived stress. It can be assumed that teachers acquire a repertoire for handling challenging student behavior and become more versatile in using it as they accumulate experience in teaching; however, teachers may as well become increasingly stressed by the daily demands (Körner, 2003). Sari (2004) found in a sample of 33 Turkish special school headteachers and 262 special school teachers that teachers with a higher number of years of experience in teaching also experienced higher levels of EE and DP than their

less experienced colleagues. On the other hand, experienced teachers scored higher on PA than their colleagues with lower numbers of years in teaching.

Marital status. Burnout levels among divorced teachers in a study by Buschmann and Gamsjäger (1999) were significantly higher. Bauer et al. (2006) found a relationship between marital status and type B (burnout) work behavior in teachers. The percentage of teachers classified as type B who were divorced was almost twice as high as for teachers who were married or in a relationship (51.1% versus 28.%). Additionally, the proportion of divorced teachers in the type G (healthy-ambitious coping style, not at risk for burnout) group was only about one third compared to their colleagues who were married or in a relationship (4.5% versus 14.9%). The authors suggested that social support plays an important role in terms of teachers' work-related coping strategies as well as in terms of lower scores on the Symptom Checklist-90-R (SCL-90R), which measures psychological problems and symptoms of psychopathology.

2.2.3.2 Individual Characteristics

In addition to studying the impact of demographic variables on teacher stress, researchers have also examined the role of individual personality characteristics and coping resources in the development of stress and burnout symptoms. Working in the same type of school with similar environmental conditions can lead to different outcomes in terms of stress and burnout (McCarthy et al., 2009). Personality traits that may potentially be related to teacher stress include locus of control (Körner, 2003) and self-esteem (Greenberg et al., 1992; Dorman, 2003).

Locus of control. Research on the concept of locus of control, defined as the way people see the relationship between events and themselves, suggests individuals with a

more internal locus of control may experience more stress, because they feel responsible for everything and have a tendency to blame themselves if anything goes wrong (Lunenburg & Cadavid, 1992). Other studies found no differences or yielded contradictory results (Körner, 2003; Byrne, 1999).

Self-esteem. A number of studies found that self-esteem, defined as level of regard a person has for him- or herself, may result in more effective coping with stress (Abel, 1996). Villa and Calvete (2001) found an association between teacher self-concept variables and levels of stress and burnout in teachers. Dorman (2004) found in a sample of 264 Australian teachers (99 from primary, 103 from secondary, and 44 teachers from combined schools) that self-esteem predicted EE, DP, and PA (Greenberg et al., 1992).

2.2.3.3 Coping Resources

Coping skills are another important set of variables on the individual teacher level. According to transactional models of stress and coping, the stress response occurs only if individuals perceive demands to be higher than resources. If teachers do not experience the same demands in the same school setting, the difference in their response to those demands may be due to the coping resources available to them. The role of psychological coping resources is pivotal in appraising potentially stressful situation or interactions (see figure 1). Primary cognitive appraisal of a situation or interaction is directed towards demands and preventive coping strategies, while secondary appraisal addresses combative coping resources, e.g., available social support. The first ones to differentiate between combative and preventative coping resources were Matheny et al. (1986).

The following section presents findings from the literature on the external coping resource of social support (Greenglass et al., 2002) and to internal coping resources self-efficacy (Schmitz & Schwarzer, 2000) and self-acceptance (McCarthy et al., 2009).

Social support. Social support is a buffering factor that has been researched extensively (Greenglass et al., 2002). According to Burke, Greenglass, and Schwarzer (1996) it may very well be more likely to represent an individual personality variable than social interactions or a resource provided by others. Sarason, Sarason, and Pierce (1990) defined social support as an individual trait based on a sense of acceptance by others. Fimian (1986) found lower stress levels in special education teachers if they received support from a supervisor. Peer support from colleagues played also an important role in reducing stress levels. Griffith, Steptoe, and Cropley (1999) confirmed the positive impact of social support on elementary teachers' stress levels. Van Dick et al. (1999) found social support to be negatively correlated with teacher stress levels in a study of a representative sample of 456 elementary teachers from Hessen and North Rhine Westphalia in Germany. Finally, research has shown that social resourcefulness can potentially mediate the effects of daily hassles and demands on health and well-being (Berkman, 1985; Lambert et al., 2008; Lambert, McCarthy et al., 2008; Procidano, 1992).

Self-efficacy. According to Brouwers and Tomic (2000), self-efficacy theory as a concept of social cognitive theory aims at explaining individuals' domain specific behaviors (Bandura, 1997) and can be defined as a person's belief in his or her ability to achieve certain professional goals (technically, interpersonally, and organizationally). It is a belief in one's ability to cope with challenging demands by personal effort and strategic planning (Schwarzer & Greenglass, 1999). Longitudinal studies have shown that

teacher self-efficacy may particularly predict the DP component of burnout (Brouwers & Tomic, 2000). Researchers have suggested that a decreased sense of self-efficacy is at the root of the development of burnout symptoms (Friedman, 2000). For example, a teacher's perception of self-efficacy in their ability to manage the classroom is an important factor (Parkay et al., 1988). Low self-efficacy has consistently been found to predict teacher stress and burnout (Buschmann & Gamsjäger, 1999; Schmitz & Schwarzer, 2000; Schwarzer, Schmitz, & Tang, 2000; Yoon, 2002).

Self-Acceptance. The degree to which one can accept and overcome personal strengths and weaknesses in demanding life situations has been related to level of perceived stress and burnout in teachers (Lambert et al., 2006; 2008; McCarthy et al., 2002; 2006). The literature in this section was reviewed chronologically and reflects the development of the PRI scales.

McCarthy, Lambert, Beard, and Dematatis (2002) conducted a study to examine the reliability and validity of the PRI scores obtained from a sample of 501 undergraduate students. Using exploratory factor analysis (EFA), they found the same type of preventive resources to be significant predictors of stress prevention as identified by McCarthy et al. (1997) and McCarthy and Lambert (1999). They were self-confidence, social support, self-directedness, and acceptance.

Results from the EFA also confirmed three underlying factors in the PRI: Perceived Control, Maintaining Perspective, and Social Resourcefulness. Additionally, a fourth factor, Self-Acceptance was retained, which correlated moderately with all scales. It did not correlate highly with any one of the scales in particular. Therefore, it was concluded that items on the Self-Acceptance scale were theoretically similar and

important to the overall theoretical construct of the instrument, which is preventive coping. The fact that items on the Self-Acceptance scale yielded structure coefficients greater than .40 across several factors when they were reintroduced into the factor analytic solution, suggested the possibility of a higher-order factor. In addition, the items on the Self-Acceptance scale followed a conceptual theme: They were related to balance and acceptance. Since the importance of those aspects as a preventive coping resource had previously been supported by research on the role of self-esteem as anxiety buffer (Greenberg et al., 1992), the Self-Acceptance scale was retained and further refined (Lambert et al., 2006).

Lambert et al. (2006) confirmed the factor structure of the PRI suggested by McCarthy et al. (2002) using a modified version of the PRI with a sample of 344 undergraduate educational psychology students from a large, southwestern university. Further items were created to explore the dimensionality of Self-Acceptance. Lambert et al. hypothesized that Self-Acceptance would play the role of a higher-order factor and explain the covariances between the other three scales. Existing items were modified and additional items were written for each of the other three factors Perceived Control, Maintaining Perspective, and Social Resourcefulness as well as for the fifth factor labeled Scanning as another important aspect of coping (Aspinwall & Taylor, 1997). A confirmatory factor analysis supported the construct validity for the three primary preventive resources and the role of Self-Acceptance as a higher-order factor.

McCarthy et al. (2006) examined the relationship between preventive coping resources and burnout in a survey of 36 preschool and 112 elementary education teachers in North Carolina and South Carolina. The dependent or criterion variable (burnout) was

measured by the Maslach Burnout Inventory (MBI). The independent or predictor variable (preventive coping resources) was measured by the PRI. Using Multiple Regression, they found that lower Self-Acceptance and being a first year teacher was associated with the EE component of burnout.

2.3 Literature Specific to the Measures CARD and PRI

This section reviews the previously conducted research that was conducted using the PRI and CARD. The first section summarizes findings from studies, which were conducted using both the CARD and the PRI as well as additional measures. The next section provides information on four studies that used the CARD. The third and last section introduces the study by McCarthy et al. (2009), which used both measures as well and which was replicated in the present investigation in order to accomplish cultural comparison.

PRI and CARD. Using Structural Equation Modeling, McCarthy, Lambert, O'Donnell, Villareal, and Melendres (in press) tested if demands and disruptions of teaching mediate the relationship between resources and burnout. They used the PRI, the CARD, the Standard Questionnaire (SQ) and the MBI to examine the role of teacher perceptions of resources, demands, and disruptive student behaviors as predictors of burnout symptoms in 263 teachers. The authors found relationships between the disruption of teaching and loss of satisfaction in this sample of U.S. elementary teachers. Similar levels of association for each of the constructs disruption of teaching, classroom demands, and preventive coping were found in predicting burnout symptoms.

CARD. The Classroom Appraisal of Resources and Demands (CARD) was developed to examine teacher perceptions of demands specific to their classroom and of

the resources provided by their schools to cope with those demands. Stress researchers have defined resources as both material resources (money, materials, technical support from others, etc.) and personal resources (coping strategies, interpersonal skills, etc.) The CARD is based on transactional models of stress and coping, which focus on cognitive appraisals of an event and its meaning for a person's well-being (Lazarus & Folkman, 1984). Its two scales, Resources and Demands, allow for the formation of a stress score by determining the difference between the two scale scores. By means of this scoring system participants can be divided into three groups, i.e., Resources greater than Demands (R > D), Resources same as Demands (R = D), and Demands greater than Resources (D > R).

In the first study, Lambert, O'Donnell, Kusherman, and McCarthy (2006) examined teachers' stress levels in preschool settings with a particular focus on structural features of the classroom (# of children in the classroom, teacher qualification) using a sample of 317 preschool teachers in four southeastern states. The authors used a Mixed factorial ANOVA (subscale - within subjects term, stress group - between subjects term) to test differences in mean scores between the subscales and stress groups. Statistically significant main effects could be found for stress groups, subscales, and for interaction stress group by subscale. Using Tukey post hoc comparisons, the Demands subscales could be rank ordered as follows: Children with problem behaviors, Administrative demands, Children with other special needs, Classroom environmental demands. The Resources subscales could be rank ordered as well: General program resources, specialized resources, and parents. Teachers who rated D > R (most at risk, 34.4% of the sample) also reported 1.529 more children with problem behaviors on average. In this

sample, 30.9% rated R=D and 34.7% rated R > D. No differences between the three groups were found for first year teachers (R > D – 13.9%, R=D – 11.2%, D > R – 18.5%). Limitations in this study were related to the ability to generalize results, because the majority of participants were employed in Head Start settings, which are federally funded schools. A moderately high level of equipment with materials can be assumed due to more funding they receive than many other childcare settings. Additionally, children in Head Start usually come from families on the lower income range, which may have impacted the results as well.

Next, Lambert, McCarthy, O'Donnell, and Melendres (2007) expanded the previous study by surveying 276 elementary teachers from Texas, North Carolina, and South Carolina. Using a Mixed factorial ANOVA to test differences in mean scores between subscales and stress groups, statistically significant main effects were found for stress groups, subscales, and for interaction stress group by subscale (only for Resources). Using Tukey post hoc comparisons, the demands subscale could be rank ordered as follows: Children with behavior problems, administrative demands, children with other special needs, and classroom environmental demands. The Resources subscales could be rank ordered as follows: Instructional resources, additional adults in the classroom, support personnel, and specialized resources. Teachers who rated D > R (most at risk, 35.1% of the sample), reported on average 2.020 more children with problem behaviors and 1.370 more children with learning disabilities than teachers who rated D = R (33.0%) or R > D (31.9%). No difference was found between the three groups for teachers within their first two years of teaching (R > D – 20.5%, R=D – 20.0%, D > R – 26.5%). Class size and teacher experience did not emerge as important

variables in terms of teacher stress. This may have been due to the limitations of the study, i.e., a convenience sample mostly from Title 1 schools was used. Findings may therefore not generalize to teachers in schools for mostly middle class children. Similarly to the previous study, the use of a self-report instrument and of descriptive and correlational statistics also limits the possibility to generalize results.

In the third study that used the CARD, Jazzar, Lambert, and O'Donnell (2007) found that teachers who indicated their intention to leave the profession reported that the most demanding components of the classroom environment were disruptive student behavior and the challenges associated with children with a variety of special needs.

Finally, O'Donnell, Lambert, and McCarthy (2008) explored the relationship of school and teacher characteristics to perceived resources and demands. Using Hierarchical Linear Modeling, they examined what percentage of the variance partitioning of the dependent variables (CARD scale and subscale scores) among prekindergarten and elementary teachers was found between schools and between teachers. Data were collected from 521 prekindergarten and elementary teachers in 16 schools in an urban region in the Southeastern Unites States. Eight schools were Title 1 schools and six schools received Targeted Assistance. Participants could be classified into three groups: D > R (24.2%, most at risk for stress and burnout), R > D (38.0%), and D = R (37.8%).

It was found that 96.06% of the variance occurred within schools and only 3.94% occurred between schools. This result suggests that teacher appraisals of resources and demands are stronger indicators of stress than environmental differences. There was also a positive association between Percentage of Minority Students and the CARD subscale

Other Student Related Demands, a negative association between Percentage of Minority Students with Availability of Instructional Resources, and a negative association between the Composite Achievement score and the CARD subscale Availability of Instructional Resources. Finally, teachers who were new to the school reported fewer demands on the CARD Behavior Problems subscale.

Limitations of the study included the homogeneity of the teacher sample being from one suburban county and from schools with similar demographic variables. Recommendations for future research included a comparison of teacher perceptions among different types of school districts (inner city, rural, urban, suburban), replication studies with teacher samples from other social or cultural backgrounds in order to extend the validity evidence on the CARD, and efforts to identify effective coping mechanisms at the teacher level. Since the strongest finding of the study was related to the overwhelming majority of variance occurring within schools, more research is needed to examine why some teachers excel while others struggle in the same environment.

Foundational study for present investigation. McCarthy et al. (2009) examined data from 451 elementary teachers in 13 elementary schools in three adjacent counties in an urban region in the Southeastern Unites States (overall response rate of 77.62%). Using Hierarchical Linear Modeling (HLM) they analyzed if any of the variance in reported burnout symptoms among prekindergarten and elementary teachers was found (a) between schools, with individual/teacher perceptions of demands and resources aggregated to the group level, and (b) at the individual teacher within schools level, taking into account teacher perceptions of classroom resources and demands, coping resources, and years of experience. The CARD was used to assess classroom resources

and demands, the Preventive Resources Inventory (PRI) (McCarthy & Lambert, 2001) was used as a measure of teachers' psychological coping resources, and the Maslach Burnout Inventory (MBI) (Maslach et al., 1997) to measure burnout symptoms.

Similar to O'Donnell et al. (2009), McCarthy et al. (2009) found as well that most of the variance in burnout symptoms as measured by 22 items on the MBI within 451 respondents was explained between teachers (93.2%) and not between schools (6.8%). Each of the individual teacher-level variables as measured by the CARD was associated in the predicted direction with burnout symptoms. EE was related to years at current school, demands, stress, and coping (36.1%). DP was related to stress and coping, PA was related to demands and coping, burnout was related to years at current school, demands, stress, and coping (37.3%). Being a first year teacher (as compared to being a teacher with more experience) was a significant predictor of Emotional Exhaustion (EE).

The fact that individual differences among teachers within schools in perceptions of demands and resources were more predictive of burnout symptoms than differences in school context supports the core concept of transactional models of stress as suggested by Lazarus and Folkman (1984): Stress responses occur if perceived demands outweigh perceived resources. The findings also show that the CARD is uniquely suited to measure and identify specific factors that contribute to individual teacher stress levels, which has been a recommendation from experts in the field of teacher stress research for many years (Kyriacou, 2001).

Limitations of the study included that analyses were based on a convenience sample. Teachers had a wide range of experience levels (years of teaching). Also, 6 of 13 schools were Title I schools. This fact is important for the result of no differences in

burnout symptoms between schools, which may not generalize to teachers at schools for mostly middle- or upper middle-class children. Only three neighboring school systems in one geographic region (similar demographic compositions) and only 13 schools were included. This restricted researchers' ability to examine school effects and to include school organizational attributes in the model. Methodologically, the use of self-report instruments should be extended by adding observational and interview data. Finally, the nature of the type of statistical analyses conducted (correlational analyses) did not allow for causal inferences.

For future research the authors recommended replication studies with a larger and more diverse sample of schools. to extend the reliability and validity evidence for the use of the measures in various educational contexts as well as the evidence for construct validity of the CARD and PRI. This may help to examine if the limited between-school variance generalizes to other settings. It may also allow measurement of a possible association of school climate, teacher satisfaction, and organizational variables with aggregate school-level teacher stress and burnout. Finally, measuring contextual variables such as aggregate school-level poverty, demographic characteristics, management climate and administrator traits, achievement status, and teacher characteristics may help clarify the link between school characteristics and school means of teacher stress and burnout.

2.4 Synthesis - A Multilevel Approach to Teacher Stress and Burnout

According to transactional models of stress (Lazarus, 1999), burnout symptoms develop as reactions to stressors. Stressors include school-specific, environmental factors such as type of school (Nübling et al., 2005; Shoho, 2002), grade level taught, and stressors that are characteristic for the teaching profession, e.g., challenging student or

parent behaviors. Teacher-specific factors include demographic variables, individual characteristics and personality traits as well as coping strategies. Other individual characteristics that have been paid attention in the research literature in their role as potential contributors to teacher burnout are teacher satisfaction (Grayson & Alvarez, 2008), a lack of positive mood regulation (Mearns & Cain, 2003) or unrealistic aspirations (Schmitz et al., 2002). In a broad sense findings from this literature review suggest no differences in the relationships between variables among Anglo-Saxon countries. Except for minor inconsistencies, themes are largely consistent.

Overall, empirical results from the literature reviewed in this chapter show similarities across countries. A pattern that has been researched by several authors (Rauin, 2007; Unterbrink et al., 2006; Bauer et al., 2007) was observed with respect to teacher health and early retirement. In Germany, the review of literature showed that teachers are more likely to continue teaching but to retire early based on health-related reasons, while in the U.S., high turnover rates early in the career seem to be a more important problem (Ingersoll, 2001). This may be related to differences in cultural values (Savicki, 1997), in educational systems, school level or individual teacher level factors. For example, the nature of teacher training in Germany hardly allows graduates from teacher preparation programs to pursue any other career than teaching. This may impact teachers' perceptions of the relationship between demands and resources as well as the development of burnout symptoms.

There is also evidence in the literature that variables associated with teacher burnout may affect the three burnout dimensions to different degrees (Bibou-Nakou et al., 1999; Evers et al., 2004; Hastings & Brown, 2002; Kokkinos, 2008; Savicki, 2001).

There are several key conclusions to draw from the empirical research reviewed in this chapter. There has been an emphasis on investigating teachers' subjective perspectives and experiences with occupational stress (Kyriacou, 2001). It is still not known why some teachers survive and thrive while other teachers burn out and/or leave teaching under similar environmental conditions. Even meta-analyses have not succeeded in answering the question what factors have the strongest impact on teacher stress (Montgomery & Rupp, 2005). A tremendous amount of studies has been conducted, most of them using self-report measures and cross-sectional designs. Studies that are in line with high quality research criteria often yield contradictory results. Some researchers found that contextual variables had a stronger impact (Burisch, 2002), others report that personality traits had more predictive value (Mills & Hübner, 1998). Conclusions as to what factors have a greater impact on teacher stress, different work environments or individual teacher factors cannot be drawn. According to Krause and Dorsemagen (2007), research on teacher stress is currently in a cul de sac.

In three areas future research is needed. First, not many studies provide longitudinal data that allow for understanding causal relationships in the development of the burnout syndrome. Research using longitudinal designs, as for example implemented by Rauin (2007) or Schaarschmidt and Kieschke (2007) may help to consolidate findings from the existing research base.

Secondly, self-report measures cannot measure specific situational aspects and their impact on teacher stress levels. There is a need for longitudinal studies that consider teacher-student interactions using research designs that account for observable factors and stress reactions in teachers (Krause, 2002).

Third, despite a large amount of literature on teacher stress and burnout, a need for more methodologically valid empirical research which goes beyond mere frequency counts and correlational analyses is given. Studies with more complex designs often lack sufficient sample sizes or are conducted on disproportionate and therefore not representative samples (Hastings & Bham, 2003). Therefore, a multilevel approach to understanding the teacher stress and burnout process is warranted, which defines the psychological process of the development of stress and burnout in teachers as a result from the interaction of individual (teacher-specific) and environmental (school-specific) variables.

The latter need was addressed in the present investigation. Research using multilevel models can potentially reflect the nested nature of schools more accurately. Modeling the interaction of variables at the individual teacher and school level simultaneously may advance current understanding of the complex interplay of variables on different levels in the development of teacher stress and burnout.

Fourth, cross-cultural research that allows for valid comparison based on identical research design is needed. Adding a cultural comparison perspective can potentially extend the knowledge base on teacher stress and burnout by describing the phenomenon beyond the boundaries of a single country.

CHAPTER 3: METHODOLOGY

Introduction

The purpose of the current study was to explore the relationship of general and special education elementary teachers' perceived classroom demands and resources, years of experience, Self-Acceptance, and challenging student behavior to reported burnout symptoms in the U.S. and Germany. The study was a non-experimental, cross-sectional quantitative study using survey methods. The design of the study included descriptive, inferential, and multivariate statistics. The purpose of applying the multivariate procedure of Hierarchical Linear Modeling was to depict the relationship between multiple predictor variables (independent variables) and burnout as the only dependent variable while accounting for multi-level effects. Descriptive statistics were employed to describe the sample. A convenience sample was used and consisted of 469 elementary teachers from Baden-Württemberg, Germany. The U.S.data sample consisting of 451 elementary teachers had already been collected in a large metropolitan area in North Carolina and was used for cross-cultural comparison. Each of the following research questions was addressed by analyzing the country specific data from the U.S. and Germany and by contrasting the two samples of teachers:

1. What challenges do teachers report as most demanding?
2. What percentage of teachers is at risk for stress?
3. How much variance exists in reported burnout symptoms within elementary teachers between individual teachers and individual schools?

4. Is there an association between burnout symptoms of teachers and their experience, perceived classroom demands, occupational stress, and Self-Acceptance?

Context of the Study

The U.S. partner school system was in a large metropolitan area in North Carolina with 451 measures already collected and analyzed (McCarthy et al., 2009) from a total of 12 elementary school settings. The school system is part of the metropolitan statistical area of Charlotte. It includes urban and suburban areas in the Southeastern United States. According to the Census Bureau (2006), Cabarrus County has a total population of 163,262. Charlotte has a total of 630,478 inhabitants, and North Carolina has 9,061,032 inhabitants. In 2006, 11 percent of the residents in the county that was surveyed in this study were below the poverty line. In this percentage included are 14% children under the age of 18, compared to 9% of individuals older than 65. Eight percent of all families and 31% of families with a female head of household had incomes below the poverty level. Eighty-one percent were white, 15% were African American, 8% were Hispanic, 2% were Asian, and 2% were some other race, less than 0.5% were American Indian and Alaska native, and less than 0.5% were Native Hawaiian and Other Pacific Islander. Cabarras county has a total of 31 schools. Among those are 16 elementary schools, 6 middle schools, 5 high schools, 3 special schools, and 1 charter school. A total of 24,000 students are enrolled in the school system with a total of 12,000 elementary students. All elementary schools were surveyed upon obtaining permission to conduct a survey of elementary teachers in the Cabarrus county school system.

The U.S. teacher sample used in this study was part of a larger sample (n = 3,511) collected for a cross-cultural comparison research project across seven countries (Germany was not included). The same U.S. teacher sample has previously been analyzed to compare high and low poverty schools as well as differences in teacher stress and burnout in spring and fall of an academic year (O'Donnell, Lambert, & McCarthy, 2008).

The German partner site Baden-Württemberg is an area with similar socioeconomic characteristics to the Cabarrus County area. Of the total German population, 13.6% have an income that is less than 60% of the median income. Of those are families with at least three children (13.9%), children (15%), single parents (35.4%), migrants (24%), and unemployed individuals (40.9%). As of August 2008, the total unemployment rate was 4.1%.

Baden-Württemberg is the third biggest of the 16 German federal states. Two well known and internationally operating companies have their origin in Baden-Württemberg: Bosch and Mercedes. It has a total of 10,738,753 inhabitants, 35 counties (Landkreise), nine city counties (Stadtkreise), and four administrative districts (Regierungsbezirke): Freiburg (2,195,694 inhabitants), Karlsruhe (2,738,609 inhabitants), Stuttgart (4,006,537 inhabitants), and Tübingen (1,806,616 inhabitants). In 2007, the share of foreigners was 11.8% (a total of 1,177,461 inhabitants), mostly from Turkey, Greece, former Yugoslawia, Italy, Spain, and the former Soviet Union.

3.1 Design

A replication of the McCarthy et al. (2009) was conducted using the same research design and the same data. A cross-sectional survey design (Creswell, 2005) was

used in both the U.S. and the German sample. Quality indicators for conducting survey research according to experts in the field were followed (Creswell, 2005; Dillman, 2006; Salant & Dillman, 1994). They are outlined in this section. According to Dillman (2000), steps need to be taken to ensure an appropriate response rate. Inherent in the use of survey methodology are four threats to validity (Salant & Dillman, 1994). They include sampling error, coverage error, measurement error, and response bias.

Sampling from a population. Sampling error occurs if only a subset of a population is surveyed instead of conducting a census. It was controlled for by using a large sample size. Coverage error occurs if not all members of the survey population had an equal chance of being sampled for participation in the survey. It was limited by obtaining a list of all elementary schools from the Baden-Württemberg Ministry of Education (Ministerium für Kultus, Jugend und Sport in Baden-Württemberg). Initially, approval from the Ministry of Education to conduct a survey in the Baden-Württemberg school system was obtained (see Appendix A). Expecting a return rate of below 30%, elementary principals from at least 4 counties were selected in each one of the 4 districts in Baden-Württemberg (Freiburg, Karlsruhe, Stuttgart, and Tübingen) in collaboration with administrators from the 4 districts in Baden-Württemberg. A sampling list was established and principals were contacted by administrators from the respective district. One district administrator preferred providing the researcher with a list of school addresses. Then schools were contacted by a personalized E-mail from the researcher using Pegasus Mail.

Designing instruments. Measurement error is the result of poorly worded questions so that inaccurate or uninterpretable answers are collected. It is important to use

a good instrument with questions and responses that are easily understood. The questionnaire should be clear, have single questions that match the answers in wording, be brief and free from jargon and overly technical language. Validity and reliability research have previously been conducted on all parts of the instrument. The CARD and the SAC scale from the PRI were translated into German and back-translated into English using an expert panel (Hambleton & Patsula, 2000). Face validity was obtained by conducting a pilot study to ensure clarity of questions.

Collecting data. Use of electronic surveys is a quick form of data collection but a disadvantage is that all participants are not comfortable using the electronic method. Electronic copies were only distributed if requested. Dillmann (2000) recommends a more personal approach to surveys in order to increase response rate. The researcher tried therefore to get access to teacher meetings to introduce the purpose of the study, have participants fill out the survey on site, and be available for questions if necessary. Finally, a research partner from the Pedagogical University of Ludwigsburg provided a letter of support, which was attached to the emails to principals (see Appendix B).

Obtaining a high response rate. A response rate of 50% or better is desirable. In order to achieve a high response rate, schools were offered to have the completed questionnaires picked up by the researcher, but most often they opted to mail their packages to the researcher. Since the questionnaire was long (9 pages, see Appendix C), principals were offered postage and printing reimbursement as a token of appreciation. A reimbursement form was provided on the website http://education.uncc.edu/teacherstress_and_coping. Schools were also offered an individual summary of the results of the survey including only the participants of their

own school if a minimum of 5 teachers participated in the study (in order to ensure anonymity).

When a significant number of people do not respond to the survey and is different from the rest of the sample in a way that is relevant to the study's goals, non-response error occurs. Non-response bias is the effect of non-responses on estimates that occur in a survey. Demographic questions in the survey were used to identify participants who were not members of the studied population and their responses were eliminated. The cover letter clearly also addressed the desired characteristics of respondents. Response bias was also limited by sending follow-up emails including another copy of the questionnaire. Finally, this threat is not simply controlled for by achieving a high response rate. Therefore, a wave analysis was conducted to check for response bias.

A wave analysis was conducted after each of the four waves of data collection in the four administrative districts (Regierungsbezirke Freiburg, Stuttgart, Karlsruhe, and Tübingen) who have their own regional boards (Regierungspräsidien) in Baden-Württemberg (Dillman, 2006). Low response rates in two districts were mostly due to a similar investigation related to teacher health that was presently being conducted in one district and that had just been completed in the other district. This other study used the Copenhagen Psychosocial Questionnaire (COPSOQ) and was conducted by the Baden-Württemberg ministry of education (Ministerium für Jugend, Kultur und Soziales). Based on some similarity of content, multiple principals decided for their schools not to participate in the present study, which may explain the low response rate. The only difference that may exist between respondents and nonrespondents was that nonrespondents in this study chose may have chosen to not participate in this study based

on their high levels of perceived stress and burnout, which may have impacted the results of this study. On the other hand, it may very well be that a subset of individuals responded, which had higher levels of burnout and was hoping for useful results that may provoke change. No other attitudinal or sociodemographic differences were found. While the emphasis of the COPSOQ investigation is more on teacher health and well-being (http://www.copsoq.de), the focus of the present study was more on the specific situation of teachers in their specific classroom and school environments.

3.2 Participants

The U.S. sample consisted of 451 elementary teachers from a large metropolitan area in North Carolina (grade levels kindergarten through 5). Data had previously been collected and analyzed by McCarthy et al. (2009). The response rate was calculated based on counts of eligible staff, teachers, and assistants in the participating schools. It ranged from 59.26% to 96.77% with an overall response rate of 77.62%.

The German sample consisted of 469 elementary teachers (grade levels 1 through 4) from 62 schools in Baden-Württemberg, Germany. Of those, thirteen principals had agreed to invite the researcher to a staff meeting to administer the survey package. Twelve schools chose the printing and reimbursement option, 12 schools were provided with questionnaires, envelopes, and postage by the researcher, and five schools requested an individual summary of findings for the participants of their school. A total of 49 general education elementary schools were included and 13 special education elementary schools. The response rate was calculated based on teacher counts in the participating schools ranged from 17.65% to 100.00% with an overall response rate of 60.56%.

Approximately 1,112 schools from the following four districts were asked for their willingness to participate in the study:

(a) The Regierungspräsidium (regional council) Freiburg is responsible for 10 counties (Landkreise), who each have their own schoolboard (Untere Schulaufsichtsbehörde). The survey information was sent out to 4 out of 10 schoolboards (Offenburg, Schwarzwald-Baar-Kreis, Konstanz, and Lörrach) and forwarded to elementary and special education schools by them. One district opted not to forward the information on the survey to principals for the above described reasons. Of the remaining 3 school counties (Schwarzwald-Baar-Kreis, Konstanz, and Lörrach), 7 elementary schools and 5 special education elementary schools participated in the study.

(b) The Regierungspräsidium Karlsruhe is responsible for 12 counties. Again, 4 out of 12 schoolboards (Rastatt, Karlsruhe, Rhein-Neckar-Kreis, and Pforzheim) were chosen and emails with attached questionnaires were sent out to administrators, who forwarded the materials to elementary schools and special education schools. Three elementary schools participated in the study.

(c) The Regierungspräsidium Stuttgart is responsible for 13 counties. Ludwigsburg, Rems-Murr-Kreis, Ostalbkreis, and Böblingen were selected. Thirty-five elementary schools and 7 special schools participated in the study.

(d) The Regierungspräsidium Tübingen sent it out to nine counties (Balingen, Biberach, Reutlingen, Sigmaringen, Ravensburg, Tübingen, Friedrichshafen, Alb-Donau-Kreis, and Ulm). Each county informed principals of elementary and special schools of the study. Five elementary schools and one special school participated in the study.

3.3 Procedures

Principals were approached by email to ask for their agreement to allow the teachers in their school to participate in the study. Attached to the email, which outlined the purpose of the study to the principal, was also a letter to the principal on UNCC letterhead with more detailed information (see Appendix D), the approval letter from the Baden-Württemberg Ministry of Education (see Appendix A), the support letter by Prof. Mittag from the Pädagogische Hochschule Ludwigsburg (see Appendix B), and a copy of the questionnaire preceded by a cover letter for teachers (Appendix C). The elements of consent were clearly stated on the cover letter that came with the questionnaire. Both the email and the letters explained that participation in the survey was voluntary. Participants gave "implicit consent" when they returned a completed survey questionnaire.

Three different alternatives as to how the survey was administered, were described. First, the researcher offered to come to a staff meeting in order explain the study and for teachers to complete the questionnaire on site. Thirteen principals chose this option. The second option was for the principals to print off and distribute the questionnaire and to send them back to the researcher with each questionnaire being in an individually sealed envelope to ensure confidentiality. Twelve schools chose this option. The questionnaire did not ask for participants to reveal their grade level to ensure confidentiality. In many smaller schools, this may have revealed teachers' identity. A printing/photocopying and postage reimbursement form was provided on the project website, which could be filled out with the necessary bank information and included in the package. Third, the researcher offered to send the respective number of questionnaires including individual envelopes for each questionnaire as well as a large business reply

envelope addressed to the researcher in which to send the completed questionnaires back. Twelve schools chose this option. Principals were also offered an individual summary report for their schools if a minimum of five teachers completed a questionnaire. Five schools requested an individual summary. Finally, the letter outlined that a summary of the results of the study would be posted on the website upon completion of data analyses. Four weeks later, by November 30, 2008, a follow-up reminder email was sent out. The teachers were asked to return the surveys by December 20th in sealed envelopes without their names.

3.4 Instrumentation

The measure consisted of a packet of three previously created questionnaires that will be described in the following section. The survey contained three sections: (a) Classroom demands and resources (CARD), (b) the Self-Acceptance scale from the Preventive Coping Resources Inventory (PRI), and (c) burnout symptoms as measured by the MBI. These instruments were selected because the purpose of this study was to determine if the results from the study by McCarthy et al. (2009) were replicable with a German teacher sample. Chapter 2 contains a more thorough review of these instruments. Previous factor analytic research has demonstrated construct validity for all of the measures that were used. Demographic variables included age, gender, ethnicity, number of years of experience in teaching, number of years in their current school, and characteristics of the classroom. The closed-ended questionnaire portion of the survey contained 145 questions. A sample survey instrument, the pre-notice letter for principals, and the questionnaire were submitted to the UNC Charlotte's Institutional Review Board (IRB) for their review and approval to conduct the study was received.

3.4.1 Classroom Appraisal of Resources and Demands (CARD)

Classroom resources and demands were measured by the CARD (school-age version; Lambert, McCarthy, & Abbott-Shim, 2001). This instrument measures the situationally specific nature of teacher stress by examining teachers' perceptions of classroom resources and demands. It consists of 84 items developed based on a review of literature on teacher stress as well as interviews with teachers and administrators (Lambert, O'Donnell, Kusherman, & McCarthy, 2006). The classroom demands section examines how the classroom environment affects teachers. It consists of 35 items that ask teachers to rate the severity of demands based on various aspects of the classroom using a five point Likert scale ranging from 1, "Not Demanding," to 5, "Extremely Demanding." The Classroom Resources scale has 30 items that address the helpfulness of various school resources. Finally, a total of 19 questions assesses demographic information.

Validity evidence. Several pilot studies have been conducted during the development of this instrument to measure construct validity and to ensure that the items in the demands and in the resources scale were measuring distinct constructs. Across those studies, relatively low correlations have been found (r = -.208 to -.080) between the two scale scores, indicating that the scales are measuring latent constructs that are distinctly different from each other (Lambert, McCarthy, & Abbot-Shim, 2001).

Lambert, McCarthy, O'Donnell, and Melendres (2007) found high sample-specific reliability for both the Demands scale score (Cronbach's alpha = .92) and for the Resources scale score (α = .95). The same study also yielded factor analysis results that contribute to confirming the construct validity of the two sections of the CARD (Resources and Demands). For the Demands scale, a four factor solution emerged that

accounted for 56.65% of the variance. The Administrative Demands subscale addresses demands associated with meetings, paperwork, assessments, and various non-instructional duties. The Availability of Instructional Materials subscale involves demands associated with access to materials and supplies. The Children with Problem Behaviors subscale addresses the demands associated with behavior management and interactions with children who present challenges to the learning environment. The Children with Other Special Needs subscale outlines demands involved with children who have needs in terms of language acquisition or other disabilities.

For the Resources scale, a four factor solution emerges that accounted for 71.54% of the variance. The Specialized Resources subscale refers to resources designed to help teachers with children who have special needs. The General Program Resources subscale allows the teachers to rate how helpful they perceive administrators, other teachers, general instructional materials, and staff development opportunities. The Additional Adults in the Classroom subscale refers to the help and support teachers receive from parents and other volunteers in the classroom. The Support Personnel subscale addresses the helpfulness of individuals within the school system who are charged with providing assistance to teachers, particularly for working with exceptional children. The Instructional Resources subscale involves ratings of the helpfulness of the supplies and material resources that are available for the teachers. All of the subscales and the total score for the Resources section yielded sample-specific information with adequate reliability (.828 to .951). In the same study, criterion validity was also assessed. Associations were found in the predicted direction between the measure's scale scores and the number of children with problem behaviors and learning disabilities. More

specifically, teachers who rated classroom demands as higher than resources also reported on average 2.020 more children with problem behaviors and 1.370 more children with learning disabilities in their classrooms than teachers who reported that classroom resources were at least equal to demands.

Cronbach's Alpha correlation coefficients showed also reliability evidence for the preschool version of the CARD (Demands scale, $\alpha = .94$ and Resources scale, $\alpha = .95$) (Lambert, O'Donnell, Kusherman, & McCarthy, 2006). Further evidence for the reliability and validity of the CARD was reported by Jazzar, Lambert, and O'Donnell (2007). For a subsample of the larger study they found a relationship between indicating intention to leave the profession and higher demands (effect size = .388), lower resources (effect size = .344), and higher stress (effect size = .471) compared to teachers who intended to continue teaching. Chapter 2.3 contains a more thorough review of research using this instrument.

In an attempt to provide further empirical evidence and support for the construct and concurrent validity of the CARD, Lambert, McCarthy, O'Donnell, and Wang (in press) analyzed stress and burnout data from the same sample of 521 prekindergarten and elementary teachers by correlating CARD scores with other measures of variables that potentially impact teacher stress: general health, teacher efficacy, self-critical attitudes, and burnout symptoms. Lambert et al. (in press) examined differences in burnout symptoms and found the strongest associations with MBI scale scores with the Stress score: Emotional Exhaustion ($r = .460$), Depersonalization ($r = .336$), Lack of Professional Accomplishment ($r = .388$), and Burnout ($r = .480$). A chi square test of association was used to test the relationship between MBI and CARD classifications and

was statistically significant for all three MBI scales. A confirmatory factor analysis was also conducted and found good fit statistics regarding the construct validity of the CARD. The current study also yielded sample-specific reliability, which is reported in Table 6. The reliability estimate for the difference score (Demands - Resources) was .965

3.4.2 Preventive Resources Inventory (PRI) - Self-Acceptance scale

The Self-Acceptance scale from the PRI was used. The PRI measures teachers' preventive coping resources (McCarthy & Lambert, 2001). It is a self-report measure designed to explore level of agreement with statements related to personal habits and perceived ability to prevent stressful reactions to life circumstances. The PRI contains 82 items and uses a five point Likert-like scale ranging from "Strongly Disagree" to "Strongly Agree." This instrument in its current version includes 5 scale scores and 18 subscale scores (Lambert, McCarthy, Gilbert, Sebree, & Steinley-Bumgarner, 2006).

The five scales are (1) The Perceived Control scale refers to beliefs that one can cope successfully with life demands. An example item is, "I can handle most things." The subscales are: Efficacy, a global belief in one's success when confronting potential stressors; Mastery, confidence in specific preventive skill sets; and Persistence, a willingness to remain engaged and flexible in applying preventive strategies to potentially stressful situations. (2) The Maintaining Perspective scale assesses attitudes and beliefs that are consistent with preventing stressful situations and keeping stress-produced emotions at manageable levels. An example item is, "I am able to avoid causing myself stress by keeping things in perspective." The subscales are: Maintaining a flexible perspective, Maintaining self direction, Cognitive restructuring of perspective, and Knowing your limits. (3) The Social Resourcefulness scale evaluates the ability to draw

upon social support of caring others who can act as a buffer against life demands. An example item is, “I have mutually supportive relationships.” The subscales are: Reciprocity in relationships, Comfort in relationships, Feedback from relationships, and Assistance in relationships. (4) The Self-Acceptance scale measures how well a respondent is able to accept personal weaknesses and strengths when faced with challenging life situations. An example item is, “I may not always get what I want.” The three subscales are Identity comfort, Accepting limitations, and Balance. (5) The Scanning scale measures one’s perceived ability to recognize, anticipate, and plan for demands and potential stressors. A sample item is, “I am good at identifying things that will cause stress in the future.” This scale is constructed from the following subscales: Anticipation of demands, Recognition of opportunities to prevent stress, Planning ahead, and Follow through. The measure also includes a total score which is labeled Preventive Resources.

Validity evidence. McCarthy et al. (2002) conducted a study to evaluate the reliability of the PRI scores obtained from a sample of 501 undergraduate students. Using exploratory factor analysis (EFA), they found the same type of preventive resources to be significant predictors of stress prevention as identified by McCarthy et al. (1997) and McCarthy and Lambert (1999). They were self-confidence, social support, self-directedness, and acceptance.

EFA results yielded sample-specific evidence for the construct validity of the information from the PRI (Lambert et al., 2006). Correlations in the expected direction with other measures of stress and coping offered evidence of concurrent validity. Using Confirmatory Factor Analysis (CFA), construct validity of the PRI was further explored

and confirmed for all four preventive resources. Moderately strong negative correlations were found between the PRI total score and the scale scores of measures of psychological dysfunction as measured by the Beck Depression Inventory (BDI; Beck, 1961) and the Inventory of Interpersonal Problems (IIP; Horowitz et al., 1988) as well as with the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). Therefore convergent validity evidence was demonstrated, because relationships were in the predicted direction.

Lambert et al. (2006) also found negative relationships between PRI scale scores and a measure of healthy personality functioning to determine the degree to which the PRI measures specific preventive capacities and not simply personality traits. A type of discriminant validity evidence was demonstrated through weak correlations between the PRI total scores and an instrument, which assesses personality traits across five dimensions: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (NEO-FFI; Costa & McCrae, 1995). Group differences validity evidence for each of the five PRI scale scores and the total score was demonstrated using ANOVA and post hoc comparisons.

Cronbach's alpha procedures were used to estimate sample-specific reliability estimates for the subscales and factors of the PRI. Cronbach's alphas as calculated in McCarthy et al. (2002) and Lambert et al. (2006) were as follows: Perceived Control (.909/.897), Maintaining Perspective (.870/.873), Social Resourcefulness (.873/.822), Self-Acceptance (.708/.850). The Cronbach's alpha for Scanning, a scale not used by McCarthy et al. (2002) was .861. Chapter 2 contains a more detailed overview of

research that has been conducted using this instrument. Cronbach's Alpha for the SAC scale in this study was .835.

Results from a pilot study with the German versions of the CARD and the PRI showed that the survey packet was perceived to be very long. Therefore a modification was made to the research design used by McCarthy et al. (2009) and only the SAC scale of the PRI was used. This decision was based on findings from previous research, which indicated that SAC was the strongest predictor of stress and health.

3.4.3 Maslach Burnout Inventory - Educator Survey (MBI-ES)

The MBI-ES by Maslach, Jackson, and Leiter (1996) and the German version by Enzmann and Kleiber (MBI-D; 1989) was used to measure teacher burnout. The MBI assesses three dimensions of burnout: (1) Emotional Exhaustion (EE), (2) Depersonalization (DP), and (3) Personal Accomplishment (PA). It consists of 22 items related to the following three scales: EE is the central quality of the complex syndrome of burnout referring to feelings of being exhausted and overextended emotionally by contact with other people and work, DP refers to the development of a cynical stance toward the individuals one is working for, and PA refers to lowered feelings of competence and personal achievement in one's work) (Maslach et al., 2001). Items are rated using a 7-point frequency scale ranging from "never" (score = 0) to "everyday" (score = 6). The 9 MBI items indicating EE ask participants to rate how frequently they experience fatigue, frustration, and interpersonal stress. Example items are, "Working with people all day is really a strain for me" and "I feel frustrated by my job." The DP scale is comprised of 5 items which relate to negative experiences with colleagues and clients. Examples of DP items are, "I feel that I treat my students as if they were impersonal objects" and "I don't

really care what happens to some students." The PA subscale has 8 items and asks about positive job experiences. Examples of items indicating PA are, "I feel exhilarated after working closely with my students" and "I have achieved many worthwhile things in this job." Higher scores both on the EE and the DP subscale indicate greater risk for burnout symptoms. To facilitate data analysis, the PA scores were reverse coded (to make higher scores on the PA scale correspond with higher burnout levels) (McCarthy et al., 2006). The average score of each of those three scales was the overall burnout score for each participant in this study. Scores in the upper third of the normative distribution of the MBI are considered high (Maslach & Jackson, 1985).

The MBI is a well known instrument in stress and burnout research. It has been used in over 90% of the research on burnout (Hastings, Horne, & Mitchell, 2004; Schaufeli & Enzmann, 1998). The MBI Manual (Maslach et al., 1997) provides a review of the extensive research that has been conducted on the psychometric properties of the MBI in many countries, which support the validity of the three-dimensional structure of the measure; however, more recent research has suggested that burnout may consist of four constructs: The three measured in this study and a fourth one called cynicism (Salanova et al., 2005).

Maslach et al. (1997) also conducted research on the validity and reliability of the MBI-ES and reported Cronbach's alphas ranging from .88 to .90 for EE, .74 to .76 for DP, and .72 to .76 for PA. The overall Cronbach's alpha for the MBI in a study conducted by Lambert et al. (in press) was .909 with values of .903, .684, and .750 for the EE, DP, and PA scales. Cronbach's Alpha reliability coefficients for the U.S. and the German teacher sample examined in this study are reported in Table 11.

Translation. The German translations of the CARD and the PRI were completed using accepted translation procedures (Hambleton & Patsula, 2000). The researcher, who is a native German speaker, conducted the initial translations of the instruments. They were translated back into English by a professional translator and a UNC Charlotte graduate student who works with Anabel Aliaga-Buchenau, a professor in the Department of Language and Culture Studies at UNC Charlotte and native German speaker as well. Backward translation designs are popular for test adaptation (Hambleton & Patsula, 2000); however, the fact that a test can be back-translated correctly is not necessarily a guarantee of the validity of the target language test version. Therefore, a panel consisting of one of the authors of the instruments, the two native German speakers, and the professional translator met to compare and reconcile the original and the back-translated source language versions. Cultural and systemic differences in the school systems of the U.S. and Germany as well as language issues were discussed and various discrepancies resolved. This step included examination of semantic and idiomatic as well as experiential and conceptual equivalence (Hambleton & Patsula, 2000). Based on the panel discussion, modified versions of the target language instruments were finalized. The instrument was then field-tested with a small sample of German teachers from two of the participating schools. Based on the results of the pilot study, the decision to include only the Self-Acceptance scale of the PRI was made.

3.5 Dependent and Independent Variables

The independent or predictor variables in this study were teachers' perceptions of (a) classroom demands, (b) occupational stress, (c) preventive coping resources (Self-Acceptance), (d) years of experience, (e) number of years at current school, (f) whether

the teacher is new to the profession, and (g) whether the teacher is new to the current school. The dependent or outcome variable was burnout symptoms. Based on the prediction of transactional models of stress and coping that teachers who rate demands greater than available resources are at risk for experiencing occupational stress, the occupational stress score for each respondent was obtained by calculating the difference between the total score for the demands section of the CARD and the total score for the resources section of the CARD.

3.6 Data Analysis

Once all data were collected, they were entered into an Excel spreadsheet. Using Microsoft Excel, a random list of 20% of the teachers in the sample was created and in order to ensure that data were input correctly, an inter-rater double checked values for those survey questionnaires. This yielded a 97% accuracy rate. Data were then screened for data entry errors, missing data, and outliers. If missing data for any of the variables had been higher than 5%, a decision would have been made about which method to use to impute missing values (Allison, 2002; Tabachnik & Fidell, 2007). This was not the case; however, in the German sample, out of the 35 items on the Demands scale of the CARD, for 11 items there was a substantial number of Not Applicable responses (coded as 6). The percentage for those responses ranged from 5.10% to 74.80% with an average percentage of 32.10%. On the Self-Acceptance scale as well as on the MBI both missing data and not applicable responses were below 5% for all items.

Descriptive statistics were used to describe the sample in terms of demographics. Using SPSS software (Version 16), a frequency table was created to describe participants. The description included the number of participants, their ages, gender, ethnicity, years of

teaching experience, educational level, and classroom characteristics. Graphical data displays were inspected to look for unnatural trends and distributional properties. Measures of central tendency such as mean and median and measures of variability such as range and standard deviation statistics were explored for the variables age, experience level, burnout, demands and resources, occupational stress, and preventive coping (Self-Acceptance). Descriptive and inferential statistics were used to find correlations between the variables.

Methods Used for Question One:

Research question one was answered using descriptive statistics. The percentages of the challenges reported most often in the demands section of the CARD were calculated and compared between the U.S. and the German sample. Independent *t* tests were used to determine the statistical significance of differences between the two countries.

Methods Used for Question Two:

Research question two was answered by looking at the stress scores for each teacher and by comparing percentages of teachers that fell in the at-risk-for-stress group in both countries. A chi square test of association was used to determine the relationship between the stress groups and MBI scales. The process of dividing participants into three groups (high, low, and moderate stress level) also prepared the data set for testing the transactional model of stress and has proven to be useful in previous research that tested transactional models of stress (Lambert et al., 2006).

Thus, the samples were first explored for differences in reported demands, level of Self-Acceptance, and burnout symptoms between the U.S. and the German elementary

teacher sample. One-way ANOVAs were calculated for the three stress groups to determine if there were differences between the groups related to the dependent variables (3 subscales EE, DP, and PA as well as the burnout total score).

Methods Used for Question Three:

Research question three was answered using multivariate statistics. An attempt was made to replicate the findings of McCarthy et al. (2009), an application of HLM to variance decomposition between teachers and schools. SPSS 16 and Hierarchical Linear Modeling (HLM) software was used to examine the source of variability in burnout responses between schools, between teachers, and within teachers (Raudenbush, Bryk, Cheong, Congdon, & Toit, 2004). The unconditional model was interpreted. If between school variance had been found, school characteristics would have been used to model between-school variance to see if there are associations between school characteristics and average school-wide burnout levels.

The major properties of the unconditional models included (a) reliability, (b) correlations while accounting for lack of independence of observations, and (c) amount of variance in the dependent variables within teachers, between teachers, and between schools. The percentage of variability was calculated by dividing the error term for each level by the total error (sum of errors on all 3 levels).

Methods Used for Question Four:

Research question four was answered by looking at the conditional models. Predictor variables included teachers' years of experience, the total number of years they worked at their current school and two dummy variables indicating whether they were new to teaching or to their current school. The Self-Acceptance scale score from the PRI

and two predictor variables derived from the CARD were also included: The total score for the demands scale and the total stress score which were calculated from the difference between the total score in the demands scale and the total score in the resources scale.

A multivariate three-level measurement model was used, in which teachers were nested within their schools (third level). Scale scores were nested within teachers (second level). MBI items were nested within their scales (first level). The highest two levels of the model (levels 2 and 3) can be thought of as a multivariate two-level model for the latent scores for each construct, and the lowest level (level 1) served as a measurement model. It was used to estimate the latent scores for each construct. It may also be viewed as a Confirmatory Factor Analysis (CFA) model and allows for partitioning the total variation in a scale score into three components: Variation among schools, variation among teachers, and variation within teachers among item scores in one scale. Level two serves as the between-persons model and level three as the between-schools model (Raudenbush, Rowan, & Kang, 1991).

Hox (2002) proposed five steps for conducting HLM when using it in the context of two level models (organizational models). For the purposes of this study, those steps were generalized to a three level measurement model.

I - The Unconditional Model and the Measurement Model (scale score information) (level 1)

II - Level II Explanatory Variables (teacher)

III - Add Level III Explanatory Variables (schools)

IV - Variable by Variable (examine whether random slope model is justified)

V - Attempt to Model Slope Variance

Step I was a completely unconditional model (no predictors about scale scores, teacher or school characteristics. A model containing only predictors at the item level indicating which scale each item belongs to (measurement model) was also specified. Step II included level II explanatory variables (teacher level). Step III included level III explanatory variables (school level). Step IV included a variable by variable examination of whether random slope models are justified. This step allowed the researcher to determine whether there were substantial differences between schools in the strength of the association between independent variables and the dependent variable. Step V attempted to model slope variance, i.e., testing the impact of school characteristics on the strength of association between the independent and dependent variables.

Between-school variance would suggest the important role of school-level demographic, organizational, and structural factors in terms of teacher burnout. Little between-school variance would suggest the validity of transactional models of stress and coping according to Lazarus and Folkman (1984), which assume that potentially stressful experiences lead to burnout as a result of individual appraisal of the relationship between demands and resources.

Scores from data collected in inherently nested organizational structures may have different meanings and measurement properties at different organizational levels (here teachers and schools) (Raudenbush, 2004). The HLM measurement model approach allowed the researcher to examine the correlations between measures of similar constructs in the context of a nested organizational structure.

Furthermore, measurement error may function differently at the person and organizational levels and may even be correlated within organizational units. Single-level

models using least squares or ordinary least squares (OLS) analyses cannot account for the potential effects of nesting within organizational units on the measurement properties of the information yielded by specific measures (Raudenbush & Bryk, 2002), see Raudenbush et al. (1991) for further details concerning this type of modeling and an example of this type of analysis (McCarthy et al., 2009).

Description of the Unconditional and Conditional Models

Unconditional models. First, two unconditional models were specified. The first model did not contain any predictors and was used to estimate the decomposition of the variance in the outcome measures into the components between MBI items within teachers, between teachers, and between schools. This analysis addressed the third research question.

Using the notation of Raudenbush and Bryk (2002), this is the regression equation that predicts the outcome variable *Y* (burnout) in each school:

$Y_{jk} = \pi_{0jk} + e_{jk}$ (level 1, unconditonal)

Y_{jk} = Individual score on the DV at level 1, for teacher *j* within school *k*

π_{0jk} = Intercept (mean) for the DV in teacher *j* (level 2) varying across schools *k*

e_{jk} = Deviation of an item score from the teacher's mean, assumed mean of 0, variance to be estimated

Using variable names, the equation reads:

Item score$_{jk}$= Total Burnout mean$_{0jk}$ + Deviation$_{jk}$

This first unconditional model was specified without any predictors. The second unconditional measurement model included scale score information (EE, DP, and PA).

Conditional models. Next, conditional models were specified to include the predictor variables in order to address research question four. Level 1 nested items within their scales to estimate scale scores from items for each construct *p* for teacher *j* in school *k.* These scores can be thought of as latent constructs, i.e., underlying properties of a person that is estimated using the information from the items in the model. In Level 2 the scale scores become the DV, so scales are nested within teachers and are predicted by school means. In Level 3 school means become the DV, so teachers are nested within schools and are predicted by the school grand mean.

The first level nested the items of the outcome measure, the Maslach Burnout Inventory (MBI), within their respective scales. An individual teacher's response to an individual MBI item was the dependent variable in this model. The model did not contain any intercept, and three uncentered dummy predictor variables, each indicating the scale score assignment for each given item response (Raudenbush & Bryk, 2002).

$$Y_{jk} = \pi_{1jk} EE_{jk} + \pi_{2jk} DP_{jk} + \pi_{3jk} PA_{jk} + r_{jk} \qquad \text{(level 1, conditional)}$$

Y_{jk} = Individual teacher's item response of teacher *j* in school *k*

π_{pjk} *EE, DP, PA* = Level 1 predictors - Scale score (*p*=1,2,3)

r_{jk} = Random errors of prediction for level 1 equation, within-teacher error around a teacher's mean for each construct *p*.

The estimated coefficient for each of these three dummy variables (π_{pjk}) can be interpreted as the mean score for each person on one of the three MBI scales (EE, DP, PA), and is the model estimated latent score for teacher *j* within school *k* on construct *p* (burnout scale score). The term "latent" means that an underlying construct or property of a person (burnout) is estimated using the information from the items in the model. The

model also includes a residual term (r_{jk}) that represents the item effect within respondent, or, in this case, the within-teacher error around a teacher's mean for each construct.

The MBI total score was also modeled in a similar but separate univariate model where the level one model contains only an intercept and error term and in this way nested all item responses within a single construct, overall burnout symptoms.

The second-level model was a multivariate one in which the dependent variables (π_{pjk}) were the latent total scores for each teacher on each construct, in this case the scale scores from the MBI. Therefore, the level two models nested scale scores within teachers.

$$\pi_{pjk} = \beta_{pk00} + \beta_1 *(\text{YRSEXP}) + \beta_2 *(\text{YRS@CRTSCHOOL}) + \beta_3 *(\text{NEW2TCH}) + \beta_4 *(\text{NEW2SCH}) + \beta_5 *(\text{SAC}) + \beta_6 *(\text{DEM}) + * \beta_7 (\text{STRESS}) + u_{jk} \quad \text{(level 2)}$$

$\pi_{jk1\text{-}3}$ = Intercept (mean) that may vary across *j* teachers and *k* schools (random) becomes DV: latent total score for each teacher *j* on each construct *p* (MBI scale score)

β_{pk00} = Overall intercept, grand mean of the DV scores across all schools when all predictors = 0 (fixed effect): mean for school *k* on construct *p* (for each scale score) (p = 1, 2, 3)

β_1 - β_7 = Coefficients of level 2 predictors

u_{jk} = Random error component for the deviation of the intercept of a group from the overall intercept; the unique effect of a teacher *j* on the intercept (teacher effect around school mean)

Demographic predictor variables included the teachers' years of experience and the total number of years they worked at their current school (each entered as group mean centered), a dummy variable indicating whether teachers were new to the profession (entered as uncentered), and a dummy variable indicating whether they were new to their

current school (entered as uncentered). Three predictors based on perceptions of demands and resources were also included: The Self-Acceptance scale score from the PRI, and two predictors derived from the CARD: The total scores for the classroom demands scale and a "classroom stress" score (entered as group mean centered). The CARD and SAC scale score were standardized (M =0, SD =1) prior to entry into the models to enhance the interpretation of their coefficients as standardized beta weights.

The models include intercepts (β_{pk}) that can be interpreted as the mean for school k for construct p, i.e., each MBI scale score. Due to the centering, the intercepts in these models can be interpreted as the school-level mean for each construct for teachers who were not new to their schools or to the education profession and had the school mean number of years of experience. These models will include residual terms that represent the teacher effect around the school mean.

The third level nested teachers within their schools. The dependent variable for these models was the school mean (β_{pk}). These models contained an intercept (γ_p) that can be interpreted as the grand mean for construct p, or each MBI scale score.

$$\beta_{pk} = \gamma_{pk} + v_{\mathrm{pk}} \qquad \text{(level 3)}$$

γ_{pk} = School grand mean for each MBI scale score

v_{pk} = Error term represents school specific effect on intercept/ error around grand mean (mean of school means)

The residual term in these models (v_{k}) represents the school-specific effect, or error around the grand mean. Predictor variables were not entered into the level three models, because the purpose of this study was to test the transactional model of stress and coping by examining the variance decomposition and to determine whether there will be

sufficient between-school variance to warrant the measurement and modeling of school-level contextual variables in future research.

3.7 Conceptual Justification for Multilevel Analysis

Individuals are influenced by the social groups and contexts to which they belong. Therefore, the interaction between individual characteristics and group characteristics needs to be taken into consideration. For example, item scores are nested within teachers and teachers are nested within schools (Hox, 2002).

In many studies, only individual scale scores are analyzed and the clustering of individuals within organizations is ignored or organizational means are analyzed and the variability in responses among individual participants is ignored. Rowan, Raudenbush, and Kang (1991) argue that both approaches are flawed, because differences among teachers can occur for several reasons, which need to be taken into account. They can reflect differences in the school environment, differences between different departments within the school or grade levels, and differences in personal appraisal arising from a multitude of factors, e.g., differences in socialization, training or personality. Multilevel analysis allows to adjust for effects of variables measured at a lower level (teacher) by estimating the effects of variables measured at a higher level (school) (Raudenbush et al., 1991). It takes the hierarchical structure of data from several levels of analysis into account by allowing intercepts (means) and slopes (IV-DV relationships) to vary between higher level units. For example, the relationship between burnout (DV) and years of teaching (IV) is allowed to vary between different teachers. A multilevel analytic approach allows this variability to be modeled by treating group intercepts and slopes as DVs in the next level of analysis (Tabachnik & Fidell, 2007). In other words, differences

in means and slopes between teachers are predicted from differences in school variables. This way, third-level equations can be constructed and variability between second-level units modeled.

Hierarchical linear models are also known as multilevel regression models or random coefficient regression models, because the regression coefficients (intercepts and predictor slopes) can vary across groups or higher levels. Those groups are randomly sampled from a larger population of groups, in this case, schools. Hierarchical linear models are also known as variance component models or mixed-effects or mixed models. While these models are not exactly the same, they all have a hierarchical data set in common, a single outcome or response variable measured at the lowest level, and explanatory variables at all existing levels.

3.7.1 Dealing with Cross-level Data

Variables can be defined at any hierarchical level, e.g., the variable school size can be measured at the school level and at the student level. Additionally, variables can be moved from one level to another by aggregation or disaggregation. Aggregation means that variables at a lower level are moved to a higher level, for example by assigning to the schools the school mean of teachers' stress level score. Disaggregation means that variables at a higher level are moved to a lower level, for example by assigning to all teachers in the schools a variable that indicates the socio-economic status of the school (Hox, 2002).

Variables that can only refer to one level are called global variables, for example gender would be a global variable at the teacher level. Analytical or structural variables are aggregated from variables at a lower level, for example a school variable "school

grand mean stress" as the mean stress score of teachers at a particular school. Contextual variables are disaggregated from a higher level. For example, all teachers are assigned an environmental characteristic.

3.7.2 Why HLM and not Hierarchical Linear Regression?

Aggregating or disaggregating all variables to one level in analyzing multilevel data and conducting multiple regression or variance analysis is inadequate for the following statistical reasons: 1.) If data from lower levels are aggregated into fewer variables at a higher level, information gets lost and statistical analysis loses power. According to Bryk and Raudenbush (1992), up to 80 to 90 percent of the individual variability on the outcome variable can get lost. This leads to under- or overestimation of relationships between variables.

2.) If data from a higher level are disaggregated into more variables at a lower level, many statistical tests treat those values as independent information. The null-hypothesis gets rejected far more often and may lead to spurious results, because the sample size is incorrect. In both approaches, aggregation and disaggregation hinder the researcher from unraveling individual and group effects on the outcome variable.

Conceptually, data cannot be analyzed at a higher level and conclusions formulated at a lower level. This fallacy is known as ecological fallacy or Robinson effect. It refers to the assumption that relationships observed in groups also hold for individuals (Luke, 2004). The other way around, drawing inferences at a group level from data analyzed at an individual level equally leads to false results, too (Hox, 2002). This fallacy is known as the atomistic fallacy. A related fallacy is the Simpson's Paradox,

which refers to drawing erroneous conclusions if data from heterogeneous populations are aggregated and analyzed as if they came from a homogeneous population.

3.7.3 Assumption of Independence of Observations

Data with multiple levels involve group effects on individuals. Group effects may be assessed invalidly by traditional statistical techniques. Analyzing data at one single level such as in simple regression analysis suffers from all of the above described conceptual and statistical weaknesses. Additionally, multilevel data violate the assumption of independence of observations, because the average correlation between teacher level variables measured on teachers from the same school is higher than the average correlation between variables measured on teachers from different schools. This results in standard errors that are too small (also called "design effect"), which leads to greater probability of rejecting the null-hypothesis. This problem is similar to the assumption of sphericity, which refers to heterogeneity of variance. This assumption is more likely to be violated when dealing with events that are close in time as compared to events further apart. This assumption is violated in the presence of hierarchical data. Therefore ordinary least squares (OLS) regression produces standard errors that are too small; however, this cannot occur if these so-called design effects are incorporated into the analysis. If not, this leads to a higher probability of rejection of the null hypothesis (Type I error) than if an appropriate statistical analysis is performed or data include truly independent observations.

Possible correction procedures. A widely used correction procedure consists of computing standard errors by ordinary analysis methods, estimating the intraclass correlation between respondents within clusters, and employing a correction formula to

the standard errors. This approach allows calculation of an effective sample size for different situations (Hox, 2002, p. 5). The intraclass correlation measures the dependence of errors by comparing differences between groups to differences within groups.

Another practice in multi-level analysis is the procedure of group mean centering, which also accounts for group mean centering. It is based on the "frog pond" theory, which basically refers to the idea that a frog may be a small frog in a pond with large frogs, but a large one in a pond with small frogs. Applied to this study, the effect of an individual teacher's stress level depends on the average stress level of the other teachers in the school. This means, that a moderately stressed teacher surrounded by high stress level teachers may become more stressed over time. On the other hand, the same teacher surrounded by low stress level teachers, may become less stressed over time as well. Therefore, teachers' stress scores can be aggregated into group means (contextual variable) and these group means can be disaggregated again to the individual level (global variable). Individual scores are then expressed as deviations from their respective group means, which is known as group mean centering. In other words, the predictor raw-score becomes a deviation score by subtracting the predictor mean score. According to Tabachnik and Fidell (2007), the problem of multicollinearity, which refers to the likelihood of predictors in the interactions to correlate with their main effects, can also be solved through group mean centering.

Summary

This study used survey methodology in order to examine the relationship of general and special education elementary teachers' years of teaching experience, perceptions of occupational stress, Self-Acceptance, and challenging student behavior to

burnout symptoms in the United States and Germany. The questionnaire was compiled of the CARD, an instrument that has been subject to extensive validity research, but has not yet been used in other cultural contexts outside the U.S., one subscale of the PRI (Self-Acceptance) which is a concept that has proven to be a strong predictor of stress and burnout symptoms in teachers in previously conducted research (Lambert et al., 2006), and the widely used MBI. Data analysis consisted of three phases: Exploratory analyses, descriptive and inferential statistics, and multivariate statistics, specifically Hierarchical Linear Modeling. The purpose of this chapter was to explain the methods used in this study on factors that impact elementary teacher's perceptions of burnout. The next chapter presents the results obtained by using the described methods.

CHAPTER 4: DATA ANALYSIS

Introduction

The purpose of this study was to examine the relationship of general and special education elementary teachers' experience, their perceptions of occupational stress, level of Self-Acceptance, and the role of challenging student behavior to burnout symptoms in the U.S. and Germany. The survey package that was used included a combination of three existing instruments. They were (a) the CARD (Lambert et al., 2001), (b) the Self-Acceptance scale from the PRI (McCarthy et al., 2001), and (c) the MBI (Maslach, Jackson, & Leiter, 1996). The CARD was used to explore perceptions of resources and demands and, based on transactional models of stress (Lazarus & Folkman, 1967) to calculate a stress score from the difference between perceived resources and demands. The Self-Acceptance scale assesses the degree to which participants accept their own strengths and shortcomings, and the MBI measures the degree of burnout along three main dimensions, namely Emotional Exhaustion, Depersonalization, and Personal Accomplishment. The sample frame for the study included elementary teachers in Baden-Württemberg, Germany, and the U.S. sample originated from three adjacent counties in a large metropolitan area in North Carolina. This chapter is organized into two sections. First, background information on teacher and school characteristics will be provided and measurement properties presented. Second, results from analyses conducted to answer

research questions one through four will be described. Finally, a brief summary of findings will conclude this chapter.

4.1 Participant Characteristics

The elementary teacher sample consisted of a sample of 451 elementary teachers from a large metropolitan area in North Carolina and a sample of 469 elementary teachers from Baden-Württemberg (see Table 1). In the U.S. sample, the average age was 37.77 (SD = 10.56) and 44.45 in the German sample (SD = 11.25). Grouping both samples in seven age categories (see Table 2) showed that there were more young teachers (< 30) in the U.S. sample (28.40%) than in the German sample (12.40%). The age group > 55 on the other hand was represented by almost a third of the German teacher sample (27.30%), whereas only 7.10% of the U.S. teachers fell into that age category.

Teachers in the U.S. sample had an average of 12.80 years of experience (*SD* = 8.94), see Table 1. The German sample had an average of 17.63 years of experience (*SD* = 12.17). The experience levels in the German sample ranged from less than one year to 43 years (37 years in the U.S. sample) and 4.30% percent of the sample was in their first year of teaching (5.76% in the U.S. sample; see Table 2).

The German teachers had worked at their current school for an average of 9.90 years (*SD* = 9.77), see Table 2. Their years of experience at their current school ranged from less than one year to 38 years and 14.19% of the sample was new to the current school. In the U.S. sample, teachers had worked at their current school for an average of 7.01 years (*SD* = 6.71) with a range of less than 1 year to 34 years and 17.50% of the sample was new to the current school.

In the U.S. sample, 92.80% spent their own money for lesson planning and instructional materials (79.80% in the German sample), see Table 1. There was a larger percentage of male teachers in the German sample (16.10%) than in the U.S. sample (3.90%) and the U.S. sample was more diverse in terms of ethnicity (see Table 2).

Most teachers in the German sample had a degree comparable to a Master level degree (Staatsexamen) from a Pedagogical University (90%), which represents the typically required teacher preparation course of study (see Table 3). The majority of the U.S. teacher sample had a Bachelor's degree, which is required for licensure in the U.S (62.90%). The percentage of currently towards a degree working participants was higher in the U.S. sample (11.60%) than in the German sample (4.5%). Finally, the German sample included 20.3% special education teachers.

Testing for significance. Since the participants in the two samples used in this study were not related to each other in any way, independent *t* tests were performed for the variables in Table 1. Data were screened for outliers and for normality. The assumption of homogeneous variances was either satisfied or corrected for by using the *t* score of equal variances not assumed (see Table 1). Due to the large sample size, all *t* tests were statistically significant. In order to determine the strength of the relationship, Hedge's Unbiased Effect Size (ES) was calculated (subtracting the mean of U.S. sample from the mean of German sample divided by the pooled standard deviation). Positive effect sizes mean that the German sample scored higher than the U.S. sample and negative effect sizes mean that the U.S. sample scored higher than the German sample. The interpretation guidelines for interpreting the strength of Hedges' effect size are: weak (.2), moderate (.5), and large (.8) (Cohen, 1988). The effect size for age was moderate (*g*

= 0.582). For years of experience the effect size was weak to moderate (g = 0.448). For years at current school the effect size was weak (g = 0.332). Finally, for spending own money the effect size was weak (g = -0.391).

4.2 Classroom Characteristics

Table 4 shows the structural characteristics of the elementary classrooms. The average size in the German sample was 19.23 (SD = 6.22) and in the U.S. sample 21.84 (SD = 4.09). The average classroom percentage ranged from fewer than 1% (1.60% in the U.S. sample) for children with physical disabilities to 21.22% for children performing below grade level (26.05% in the U.S. sample). German teachers reported having an average of 3.88 children with problem behaviors in their classrooms (3.59 children in the U.S. sample), which equaled 20.18% of the classroom composition (16.44% in the U.S. sample).

4.3 Teacher Scores on Outcome Measures

Table 5 presents teachers' mean scores including standard deviations, minimum and maximum scores, and Cronbach's Alpha values on the three burnout subscales, on total burnout as well as on Self-Acceptance for both samples. Correlations between the Demands subscale score of the CARD and the scale scores of the other measures used in this study were employed to examine the construct and concurrent validity (see Table 11). Correlational analyses showed moderately strong associations between the Demands subscale score of the CARD and the stress score in both samples (U.S. sample r = .738, German sample r = .778), the behavior subscale (U.S. sample r = .625, German sample r = .732), and total burnout (U.S. sample r = .426, German sample r = .439). There was a statistically significant difference between the U.S. and the German teacher sample on

Self-Acceptance means (see Table 5). All *t*- tests conducted to examine differences between the 2 countries were statistically significant. Hedges' effect sizes are also reported in Table 5 and ranged in strength from weak to moderate.

4.4 Data Screening and Major Analyses

Data were explored for keystroke errors before analysis. A random number table was used to check 20% of the surveys for accuracy of data entry into the data matrix in SPSS. Eight errors were detected and corrected. Frequency analyses were run and visually inspected for possible data entry errors. Another 7 errors were found and corrected.

Research Question One: What challenges do teachers report as most demanding?

In order to answer research question 1, the items from the four CARD subscales Children with Problem Behaviors (4 items), Student-Related Demands (11 items), Administrative Demands (15), and Availability of Instructional Resources (5) were analyzed. The total Demands scale included 35 items. Descriptive statistics were used to explore means, standard deviations and the highest percentages of the 35 items in the Demands Scale of the CARD (items C20-C55). The percentage of teachers who responded using the two highest levels ("Very Demanding" and "Extremely Demanding") of the Likert Scale was calculated for each item. Teachers' scores on the eight CARD scales as well as measurement properties for both samples, *t* values, and effect sizes are reported in Table 6.

Children with Problem Behaviors

Both samples rated items on this scale with the highest percentages compared to the other subscales of the CARD Demands section (see Table 7). In the U.S. sample,

65.10% of the teachers reported children who do not follow directions as very or extremely demanding, followed by children with problem behaviors (64.10%), disruptive children (62.60%), and finally children who require more time and energy than most children (58.10%).

The German sample rated children with problem behaviors (50.40%) and children with other challenging behaviors (47.40%) as most demanding, followed by children who do not follow directions (46.80%), and children who require more time and energy than most children (39.40%).

Other Student-related Demands

A descriptive tabulation of Other Student-related Demands reported by teachers as most challenging can be found in Table 8. Again, the percentage of U.S. teachers who rated the demand items from C20 to C29 as very demanding or extremely demanding was higher for all items. The three demands that were reported as most demanding by both samples in the same rank order were related to range of developmental levels, number of children performing below grade level, and children with learning disabilities (in the U.S. sample with percentages of 61.90%, 49.00%, and 35.10% and in the German sample with percentages of 24.30%, 20.40%, and 16.80%). In both samples, teachers' responses within the Student-related Demands scale occurred with the lowest percentages for demands related to children with physical disabilities and the highest percentages for demands related to range of developmental levels.

Administrative Demands

Seven out of 15 items were reported with percentages of at least 41.30% in the U.S. sample (externally imposed changes) and 10.70% in the German sample (parent

conferences and contacts). Again, all demands were overall rated higher in the U.S. sample. In both samples, the highest percentage of responses reported for items within the administrative demands scale was for paperwork requirements (71.90% in the U.S. sample, 23.5% in the German sample; see Table 9).

In the U.S. sample, the following administrative demands were mentioned with high percentages: Grading student work (57.80%), student assessment (55.80%), preparing lessons (51.70%), setting up the classroom for instructional activities (43.40%), and time spent on non-teaching related duties (41.90%).

The highest percentages in the German sample were related to externally imposed changes (18.90%), administrative disruptions (16.80%), student assessment (15.20%), meetings (15.00%), and time spent on non-teaching related duties (11.60%).

Availability of Instructional Resources

The highest percentage in the U.S. sample (20.20%) occurred in response to the items regarding instructional technology (see Table 10). In Germany it came for items regarding the availability of instructional supplies such as consumable materials, pencils, paper or markers (4.80%). The second highest percentage occurred also for items regarding instructional technology (4.30%).

Overall, teachers in the U.S. sample rated demands on average as "Moderately Demanding" ($M = 2.98$, $SD = 0.60$). The German sample rated demands on average lower ($M = 2.26$, $SD = 0.53$), see Table 6. The last question in the Demands section of the CARD asked participants to rate the overall level of demands in their classroom. The majority of teachers in the U.S. sample endorsed ratings of "Very Demanding" or

"Extremely Demanding" (52.20%). In the German sample, only 11.7% rated their overall classroom demands as "Moderately Demanding" or "Very Demanding."

Testing for significance. An independent *t*-test was conducted to compare the means in the Demands section of the CARD, see Table 6. Data were screened for outliers and for normality. The assumption of homogeneous variances was either satisfied or corrected for by using the *t* score of equal variances not assumed. The independent variable (between subjects factor) was the grouping variable (U.S. or Germany) and the dependent variables were the mean scale scores and the total score of the Demands section (continuous variables).

Results showed that there was a statistically significant difference between mean scores on all subscales in the U.S. teacher sample and the German sample. The ES for the total Demands score was large (g = -1.272). Table 6 presents the mean, minimum and maximum values, and standard deviations for each subscale and the total score of the CARD in both countries.

Table 6 also displays measurement properties including *t*-values for the Resources scale. There was a statistically significant difference as well, but in the opposite direction: The mean scores for the German sample were higher. The effect size for the total Resources score was moderate (g = .669). Included in this table are also the mean scores on stress for both countries. Interestingly, there was no statistically significant difference for stress level between the 2 countries.

Research Question Two: What percentage of teachers is at risk for stress?

Subtracting a standardized version of the Resource scale from a standardized version of the Demands scale, a difference score was created for each respondent. The

reliability of a difference score formula (Crocker & Algina, 1986) was applied and for the elementary teacher sample it produced a reliability estimate of .965 (see Table 11). In order to achieve an acceptable reliability for a difference score, a low degree of correlation between the two scales as well as high reliabilities for their scale scores is necessary (Lambert et al., in press). Standardizing all scores accounted partly for a possible social desirability issue, which may be assumed given that the German teacher sample scored demands lower and resources higher. Since standardization helped to position all scores to a relative distance to the same mean (50) in both samples, the overall magnitude for demands and resources did not have to be the same in order for the gaps to be equivalent and comparable.

Since for both samples the difference score approach was reliable, the standard error of measurement for the difference scores was calculated using these reliability estimates. Next, a confidence interval was constructed around zero. The upper and lower bounds of this interval were used to establish the cut scores for classifying teachers. This procedure allowed the researcher to be 95% confident that the true score for the difference between Resources and Demands was not zero in either one of the extreme groups (R > D or D > R). All teachers could then be classified into one of the following groups: R > D (group 1), R = D (group 2), and D > R (group 3). The last group was hypothesized to be at risk for experiencing stress in the classroom (see Table 12). The percentage of teachers in the at-risk for stress group was 32.6% in the U.S. sample and 32.7% in the German sample.

Testing for significance. A chi square was calculated to examine the relationship between stress group and country. Teachers who fell in the D = R and in the D > R

groups were approximately equally distributed; however, German teachers were represented with a higher number in the R > D group (n = 187, 40%) than U.S. teachers (n = 149, 33%), with a chi-square value of 6.68 (df = 2, p = .035).

Burnout scores by stress groups. In a next step, to further illustrate descriptively the difference between these groups, the relationship between stress group and the three burnout subscale mean scores, the total burnout score and on the mean Self-Acceptance score was explored. Table 13 provides teacher means and standard deviations for all three burnout dimensions including total burnout by stress group as well as by Self-Acceptance for both samples. Prior to conducting One-way analyses of variance (ANOVAs), all variables were examined for outliers, normality of distribution, and homogeneity of variances. Relevant data were in acceptable ranges. Outliers were not more than 3 standard deviations away from the mean. A visual inspection of the distribution for each group and the values for skewness and kurtosis had all less than the absolute values of 1.0, which suggests an approximately normal distribution.

In the U.S. sample, the test of homogeneity of variances was not statistically significant except for DP, which suggests that the scores for this variable had unequivalent variances. For the dimensions DP, PA, and total burnout there was not a statistically significant difference between the D = R and the D > R groups (group 3, group 2 > group 1). For EE there was a significant difference between all three stress groups. There was a statistically significant difference among the three stress group means for all burnout subscales but there was no difference for Self-Acceptance.

A post hoc analysis using Tukey's procedure ($p < .05$ for all pairwise comparisons) indicated that for DP, PA, and total burnout the means for the D > R group

and the D = R group were significantly higher than in the D < R groups. There was no significant difference between the means of the D < R and the D = R groups except for EE. The highest EE mean occurred in the D > R group (M = 22.212). Those comparisons between groups allowed the researcher to rank order stress groups in the predicted order and based on how they were created: R > D (group 1), R = D (group 2), and D > R (group 3). Post hoc comparisons within stress groups between burnout dimensions showed that scores on EE were consistently higher than for the dimensions DP and PA in all three stress level groups for SAC.

In the German sample, the test of homogeneity of variances was not significant except for PA and for SAC. For those two variables equivalent variances cannot be assumed. A one-way analysis of variance yielded a significant difference among the three stress group means for all burnout subscales as well as for Self-Acceptance. A post hoc analysis using Tukey's procedure ($p < .05$ for all pairwise comparisons) indicated that the means for the D > R group were significantly higher than in the D < R and the D = R groups for all burnout dimensions but not for Self-Acceptance. There was no statistically significant difference between the D > R and the R = D groups for SAC.

Post hoc comparisons within stress groups between burnout dimensions showed that mean scores on the EE dimension of burnout were higher than for the dimensions DP and PA in the R = D and the D > R groups, but not in the R > D group. In this group the highest mean score was in the PA dimension of burnout (M = 11.27). The mean score on PA in the German sample was also higher than the mean score on PA in the R > D group of the U.S. sample. The same was the case for the other two stress groups as well. German teachers in the high stress group scored also higher on DP than U.S. teachers.

Overall, the total burnout score for all stress groups was statistically significant higher for the U.S. teacher sample (M = 38.10) than for the German sample (M = 32.51), see Table 13. Results showed that mean scores on all burnout dimensions were higher in the U.S. teacher sample than in the German sample except on the PA dimension of burnout, on which the German sample scored higher, and on the DP dimension of burnout, on which the D > R group in the German sample scored higher.

Self-Acceptance by stress group. The German teacher sample in the at risk for stress group (D > R) had also the lowest scores on Self-Acceptance. Interestingly, Self-Acceptance was also more strongly inversely correlated to stress, challenging student behavior, demands, and burnout in the German sample than in the U.S. sample (see Table 11). In other words, teachers in the German sample, who had higher Self-Acceptance were more likely to score lower on those variables than teachers in the U.S. sample.

Research Question Three: Is Any of the Variance in Reported Burnout Symptoms Among Elementary Teachers Found Between Individual Schools?

Data were screened prior to beginning analyses as to whether they conformed to the assumptions of using the proposed analytic methods. The intercorrelations between the scales used in this study as well as reliability coefficients for internal consistency (Cronbach's Alpha) for each scale score of both samples are reported in Table 11. The results indicated that the reliabilities of all scales can be considered satisfactory (α between .623 and .881).

HLM models assume that the error variance term in level 1 is normally distributed with a mean of zero and a constant variance. Therefore, the variances and distributional properties of the item responses were examined. It was found that distributions of item

responses were approximately symmetric and the variances were similar. Some item responses had more positively skewed distribution, i.e., the perceptions or behaviors assessed by those items were reported to occur less often than others. These items consequently had smaller variances. Given that the estimation process in HLM models is likely to be unaffected substantially if items are reasonably symmetrically distributed and if they have relatively similar variances, a decision was made not to transform those items and to proceed using them in their original scaling in the following analyses (Raudenbush & Bryk, 2002). Nine participants were eliminated due to missing data.

Variance in Burnout Symptoms between Schools

In order to test each HLM model, the first step was to fit unconditional models for both the MBI scale scores and the total score. For that purpose the level 2 variables were aggregated to the school level. Variability in burnout between schools was then examined. Initially this was done using a random-effects model for all three MBI scale scores; however, this model did not converge on an interpretable solution. The number of iterations for the algorithm would have needed an extension to an unlimited number. Similar to what McCarthy et al. (2009) found, this was not due to model misspecification. The reason was the lack of between-school variance to model several of the outcome measures.

The unconditional model did not include any predictors. The purpose of it was to estimate the decomposition of the variance in the outcome measure into the components (a) between MBI items, (b) between teachers, and (c) between schools. More specifically, both the percentage of the variance partitioning in each dependent variable (scale scores and total score) that was related to teacher level differences within schools and the

percentage of variance partitioning between schools was examined. The variance decomposition for all burnout scales for the German sample can be found in Table 14.

For the total score, most of the variance across the 9,965 item responses (22 items within 460 respondents) was between items within persons (84.19%) and ranged from 81.31 to 87.65 percent. Differences between teachers accounted for 15.81% of the variance, and 0.003% of the variance was found between schools. Table 14 also provides the values obtained from the unconditional models for each MBI scale score for the German sample.

Between teacher variance ranged from 18.67% of total variance for the EE scale to 12.35% for the PA scale. The percentage of variance between schools ranged from as little as 0.0016% for the PA scale to 0.0170% for the EE scale.

U.S. sample. McCarthy et al. (2009) found that most of the variance across the 9,922 item responses (22 items within 451 participants) was between items within persons (84.01%). Differences between teachers accounted for 14.91% of the variance and 1.08% of the variance was found between schools.

They also found that between teacher variance ranged from as much as 28.9% of the total variance for the EE scale to 9.6% for the PA scale. The percentage of variance between schools ranged from as little as 0.5% for the PA scale to 2.1% for the EE scale.

Comparing variance decomposition in the two samples. In answering research question three, this suggests that individual teacher appraisal of resources and demands was a stronger indicator of burnout than school level variables.

In the German teacher sample, the same pattern could be observed except that the percentage of variance between schools was even smaller. With respect to research

question three, this result indicates that in both samples there was very little variability in burnout between schools. Based on the extremely small amount of between-school variance, the same decision was made, which was not to proceed entering level 3 predictors into the models. Those would have been the aggregated scores (from teacher to school level) for the 5 variables new to teaching, new to school, demands, stress, and Self-Acceptance.

In addition, very similar to the findings of McCarthy et al. (2009), sufficient between-teacher variance was found for the EE and the total MBI score. Therefore, both were tested within random-effects models. Person mean and school mean reliabilities were slightly lower but acceptable in the German sample (.6 and .8) for both of these scale score models. For the DP and PA scale scores not enough variance was found between teachers within schools to use random effects models. The HLM person mean and school mean reliabilities for both of these scales were less than .5 when the models were initially attempted as random-effects models. This further confirmed the decision to forego using the random effects models for these outcomes. Since random-effects models were not used for DP and PA, the variance covariance matrices (τ matrices) that were estimated, did not include the covariances between these MBI scale scores or their respective school means. Therefore, like in McCarthy's study one advantage of the HLM measurement model approach was not realized in the analysis of the German sample either; however, since the variance between schools was very low in both samples, nesting effects on this level were not a concern anyways.

When the unconditional models were initially estimated using random effects for all MBI outcomes, the correlations between the scale scores were considerably higher

(above .7) than those presented in Table 11, which indicates that the constructs may be more related when the nested structure of teachers within schools data set is taken into consideration than what has been reported in single-level analyses. This was also the case in the U.S. sample.

Difference between special and general education. An examination of differences between special and general education teachers was not the purpose of this investigation and was not possible for the U.S. sample, because the questionnaire did not assess type of school or type of teacher; however, in the German sample such an analysis was performed since special education teachers could easily be identified, because they usually teach in special schools. A univariate analysis of variance (ANOVA) was conducted to examine if there was a difference between general (n=371) and special educators (n=94) for the variables stress and burnout. The Levene's test for homogeneity of variances was not statistically significant. There were no statistically significant differences between general and special educators, the means for burnout as well as for stress were approximately the same.

Research Question Four: Is There an Association Between Burnout Symptoms of Teachers, their Perceptions of Classroom Demands, Stress, Self-Acceptance, and Teaching Experience?

Results of the analysis of the level 2 predictors used to answer research question four are reported in Table 15. The first two columns show the intercepts, or grand means, for the unconditional and conditional models. The small differences in these values for each outcome indicate the difference between the overall mean for all teachers (the unconditional model) and the overall mean for teachers within a school who are not new

to the school and not new to teaching (conditional model). This small difference illustrates the relatively small explanatory power of the variable years of experience.

The intercept (school mean) becomes the DV in the level 3 model (for teachers within a school in number of years of experience). The variable years of experience was group-mean centered and predicted the BO school mean for teachers within a school in number of years of experience.

Relationships between EE and Level 2 Predictors

In the German sample, the EE scale score from the MBI was related to years at current school, but in the opposite direction than in the U.S. sample (U.S. β=0.024/ German β=-0.010). In the German sample being new to teaching was also negatively related to EE (β=-0.248), whereas in the U.S. sample it was not related. In both samples, EE was related to classroom demands (German β=0.199/ U.S. β=0.224). Similarly, EE and stress were not related in the German sample, but only in the U.S. sample (β=.190). Self-Acceptance (preventive coping) and EE were inversely related in both samples (German β=-0.314/ U.S. β=-.305). In the U.S. sample this model explained 36.1% of the between-teacher variance in EE. The deviance test comparing the explanatory power of the conditional model with the unconditional model (no predictors) was statistically significant ($\chi^2_{(21)}$=394.13, p<.001), indicating the value of the predictors.

In the German sample this model explained 65.1% of the between-teacher variance in EE (see Table 14). This percentage could be calculated by dividing the variance component for EE in the conditional model with all predictors (EE variance left over and not explained after all predictor variables have been modeled) by the variance

component for EE in the unconditional model and subtracting it from 1. The deviance test comparing the explanatory power of the conditional model with the unconditional model (no predictors) was statistically significant ($\chi^2_{(390)}$ =635.14, p<.001), indicating the value of the predictors.

Relationships between DP and PA and Level 2 Predictors

In the U.S. sample, the DP scale score was related to stress (β =.169) and inversely to preventive coping (β = -.154). The PA scale score was related to classroom demands (β =.158) and inversely to preventive coping (β = -.280). The remaining predictors were not statistically significantly related to the outcome measures in either model.

In the German sample, the DP scale score was related to more predictors than in the U.S. sample but not to stress. Like in the U.S. sample, DP was also inversely related to Self-Acceptance (β = -0.263), but stronger (U.S. sample β = -0.154). Different than in the U.S. sample, DP was additionally related to classroom demands (β= 0.217), to years of experience (β = 0.013) and inversely to years at current school (β = -0.019).

The PA scale score in the German sample was related to classroom demands (β = 0.110) (U.S. sample β = 0.158), inversely to Self-Acceptance (β = -.225) (U.S. sample preventive coping β = -.280), and different from the U.S. sample, it was additionally related to stress (β = 0.129). The remaining predictors were not statistically significantly related to the outcome measures in either model.

The Relationship between Total Burnout and Level 2 Predictors

The total burnout score in both samples was related to the same predictors. In the U.S. sample it was related to years at current school (β = .015), but in the German

sample it was inversely related to years at current school (β = -0.011). In both samples the total burnout score was related to classroom demands (U.S. β = .159/ German β = 0.177), to stress (U.S. β = .129/ German β = 0.100), and in both samples it was inversely related to preventive coping (Self-Acceptance) (U.S. β = -.261/ German β = -.271).

In the U.S. sample, this model explained 37.3% of the between-teacher variance in burnout. The deviance test comparing the explanatory power of the conditional model with the unconditional model (no predictors) was statistically significant ($\chi^2_{(7)}$ = 154.44, p<.001), indicating the value of the predictors.

In the German sample, this model explained 46.3% of the between-teacher variance in burnout (see Table 14). Again, this percentage was calculated by dividing the variance component for total burnout in the (univariate) conditional model with all predictors (EE variance left over and not explained after all predictor variables have been modeled) by the variance component for total burnout in the unconditional model (for total burnout) and subtracting it from 1. The deviance test comparing the explanatory power of the conditional model with the unconditional model (no predictors) was statistically significant ($\chi^2_{(391)}$ = 1263.08, p<.001), indicating the value of the predictors.

CHAPTER 5: DISCUSSION

Introduction

This chapter attempts to link findings from this empirical study of elementary teacher stress and burnout to the extant literature. The implications that can be drawn from the findings of this study are in regard to both teacher and school development. The chapter is preceded by a brief review of the purpose and methods used in the present investigation. It is then organized into four sections, in which the results of this study are discussed. In the first section the study's findings are related to previous research that used the same instruments and investigated the same variables. In addition, theoretical implications of the study, organized by the four research questions in this study, are outlined and discussed in light of previous research. Second, a summary of the unique contribution of this study to the field of teacher stress and coping is provided. Third, limitations of the study and implications for future research are discussed. Finally, implications for practice are outlined. The chapter concludes with a summary of the major findings in this study as they relate to practice, theory, and research.

Purpose and Methods

The purpose of the current study was to explore the relationship of general and special education elementary teachers' perceived classroom demands and resources, years of experience, Self-Acceptance, and challenging student behavior to reported burnout symptoms in the U.S. and Germany. The study was a non-experimental, cross-

sectional quantitative study using survey methods. The design of the study included descriptive, inferential, and multivariate statistics. The purpose of applying the multivariate procedure of Hierarchical Linear Modeling was to depict the relationship between multiple predictor variables (independent variables) and burnout as the only dependent variable while accounting for multi-level effects. Descriptive statistics were employed to describe the sample. A convenience sample was used and consisted of 469 elementary teachers from Baden-Württemberg, Germany. The U.S. data sample consisting of 451 elementary teachers had already been collected in a large metropolitan area in North Carolina and was used for cross-cultural comparison. Each of the following research questions was addressed by analyzing the country specific data from the U.S. and Germany and by contrasting the two samples of teachers:

1. What challenges do teachers report as most demanding?
2. What percentage of teachers is at risk for stress?
3. How much variance exists in reported burnout symptoms within elementary teachers between individual teachers and individual schools?
4. Is there an association between burnout symptoms of teachers and their experience, perceived classroom demands, occupational stress, and self-acceptance?

Participant Characteristics

The U.S. sample consisted of 451 elementary teachers from a large metropolitan area in North Carolina. The German sample of 469 elementary teachers came from

Baden-Württemberg, Germany. This section outlines differences found between the two samples. Effect sizes ranged from weak to moderate.

Demographics. The U.S. and the German sample were comparable in terms of sample size and grade level taught. As for the participants, the German sample seemed to be slightly older and more experienced, it included more male teachers, and almost no diversity among teachers could be detected. As Table 2 indicates, teachers in the German sample had been working longer in teaching as well as at their current school. In addition, the German sample included a lower percentage of new teachers or who had been working at the current school for less than 2 years.

Age ranges. In the U.S. sample were more young teachers (< 30; 28.40%) than in the German sample (12.40%). But the age group of > 55 was represented by almost a third of the German teacher sample, while only 7.10% of the U.S. sample fell into that category.

Education level. In the U.S., full licensure in teaching requires at least a 3-year Bachelor's degree. Any further studies usually result in a payrise. The typical teacher preparation training in Germany calls for a 4-year degree and leads to the Staatsexamen, which is comparable to a Master's degree. The German sample had a much lower proportion of teachers who were working towards a degree, which may very well be considered as a stressor (see Table 3). The percentage of teachers who indicated plans of leaving the profession for personal reasons was higher in the German sample (52.00%) than in the U.S. sample (38.50%). This resonates with findings from the literature review on the problem of high teacher attrition in the U.S. versus early teacher retirement in Germany.

Classroom characteristics. Teachers reported approximately the same percentage of children with challenging behaviors in their classroom (Table 4), but the U.S. sample rated the challenges related to the demands associated with behavior management and interactions with children who present challenges to the learning environment higher (Table 7). The U.S. sample reported a lower average number and percentage of students who are learners of the language of instruction in their classrooms (M = 2.71, 12.41%) than the German sample reported (M = 5.85, 30.42%) (see Table 4), but the challenge related to it was rated higher by the U.S. sample (21.30%) than by the German sample (10.70%), see Table 8. The U.S. sample also rated demands related to teaching children with diverse backgrounds 4 times more challenging (22.20% of the U.S. sample versus 6% of the German sample; see Table 8). This may be related to a different emphasis on valuing and supporting diverse learners and meeting their special needs in teacher training programs in the two countries. An alternative interpretative option would be related to a cultural difference based on historical development. The fact that more than twice as many U.S. teachers rated this demand as very or extremely challenging suggests that the German teacher sample in this study may have possessed more cultural sensitivity in teaching German language learners in their classroom and was better able to deal with diversity. This may be due to the higher necessity in Germany to learn at least one other language and consequently the higher likelihood for teachers in the German sample to be bilingual and therefore to be better able to converse with German language learners in their native language.

Teacher scores on outcome measures. In addition to significant differences in burnout between the U.S. and German teacher sample, there were also differences

pertaining to SAC. Interestingly, the minimum value for SAC in the U.S. sample was 2.53 and for the German sample as low as 1.00, which may reflect a cultural difference regarding the general level of Self-Acceptance in teachers between the two countries.

Results indicated satisfactory reliabilities for all scales; however, Maslach et al. (1996, p. 44) report the following correlations between the three burnout dimensions for the U.S. norm sample: EE correlates 0.52 with DP and -0.22 with PA, and DP correlates -0.26 with PA. As can be seen in Table 11, neither the U.S. sample nor the German sample replicated this pattern very well (see Table 11).

Unlike the German teacher sample of Hauptschule and Gymnasium teachers in a study by Unterbrink et al. (2007), the German sample in this study scored lower on EE (M = 25.91/ M = 14.96) and lower than the U.S. normative teacher sample (M = 21.25). The U.S. sample in this study also scored lower on EE (M = 20.56) than the U.S. norm sample (see Table 5).

The German sample of the present study scored also lower on DP than the German sample in Unterbrink's et al. (2007) study and the U.S. norm sample (M = 3.90/ M = 8.91/ M = 11.00). The U.S. sample in this study scored lower as well (M = 4.46).

Both samples in this study scored lower on PA (M = 13.68/ M = 13.28) than the German sample used in Unterbrink's study (M = 33.84) and the U.S. norm sample (M = 33.54). This suggests that elementary teachers have lower levels of burnout and is consistent with previous research (van Dick et al., 1999). Approximately the same values were found for a sample of 806 elementary teachers in Switzerland (Stöckli, 1998) as well as for a sample of 200 Swiss elementary teachers (Stöckli, 1999).

5.1 Theoretical Implications of the Study Results by Research Question

There were four research questions in this study. Each one will be answered in the following. The present study was guided by a conceptual framework of stress and coping, more specifically, transactional models of stress (Lazarus & Folkman, 1986). Transactional models of stress state that we weigh perceived demands against perceived resources when appraising potentially demanding situations. The stress response is triggered only if perceived demands outweigh perceived resources. Numerous measures for various aspects of stress are in existence; however, few aim at addressing this central theoretical premise of transactional models of stress. The CARD takes this into account, because stress is conceptualized as the difference between resources and demands. This section will discuss the theoretical implications of the results of this study.

5.1.1 Research Question One

The first research question was what challenges teachers report to be most demanding. In order to answer research question one, the percentages of teachers who rated the items on the Demands scale as “Extremely Demanding” or “Very Demanding” were calculated. The four CARD subscales were Other Student Related Demands (11 items), Children with Problem Behaviors (4 items), Administrative Demands (15), and Availability of Instructional Resources (5). The total scale included 35 items (see Table 6).

Overall, the U.S. teacher sample scored higher on demands and lower on resources. If teachers in the German sample had been given more of an opportunity to rate their perceptions especially of specific stressors related to the educational system and not only to express those under the open-ended questions in the questionnaire, their

scores on the Demands scale may have been higher. For example, chief demands such as the pressure of having to fit into the stratified German educational system, i.e., having to decide over children's future schooling, was not assessed in this investigation. In order to assure comparability, a close translation of the CARD into German was accomplished, which may have impacted this result.

While this finding may be related to a measurement issue with systemic and structural differences not being accounted for in the close translation of the CARD into German in order to assure comparability, it may as well be a depiction of a true difference between the two countries in terms of available resources and demands in teaching: the U.S. teacher sample seemed to work under more demanding circumstances than the German sample. According to Nieto (2009), research has shown that U.S. teachers teach about 1,080 hours per year while the average in OECD countries for primary schools is 803 hours. U.S. teachers also spend approximately 80 percent of their total working times with students. The OECD average time spent with students for teachers in other countries is only 60%.

Student Behavior

Again, the U.S. sample consistently had higher percentages for all four items. Consonant with the literature reviewed in Chapter 2, student behavior proved to be a major stressor (Friedman, 1995; Kokkinos, 2007). It was evident that both samples reported approximately the same number of students with problem behaviors in their classrooms, but the U.S. sample rated the challenges that students with problem behaviors present higher. Challenges related to differences in learning (from CARD subscale Other Student-related Demands) and behavioral abilities were reported most

often. Given that only a small number of special educators participated in the study, this is not surprising. For both groups, there may be a relationship to teacher training, i.e., general education teachers may not receive much training to address the needs of diverse learners.

The validity of this finding may be limited by a data collection issue. For data collection in Germany, the researcher tried to minimize threats to validity due to the phenomenon of social desirability impacting teachers' responses, i.e., the letter clearly asked principals to collect completed questionnaires in individually sealed envelopes. Since the researcher was only invited to a total of 13 staff meetings to administer the survey in person, it cannot be claimed that school administrators were never involved in the data collection process. For the U.S. teacher sample on the other hand, this was assured for all 13 schools. Therefore, in the German sample a social desirability effect may have come into play, meaning that teachers may have intended to appear more efficient in dealing with difficult student behaviors than they really are.

Other potential factors that may have impacted the results include (a) cultural and societal expectations of appropriate student behavior and parent responsibilities (Langfeldt, 1992), (b) structural differences regarding school systems (in Germany referral of students to special education can already occur at the preschool level and may be based on even mild behavioral or cognitive delays), or (c) quality of teacher preparation programs. All of these factors were not assessed.

Another more subjective impression that may be related to this factor is the strong emphasis and focus of U.S. programs for teacher preparation on the social-emotional development of children as well as the value that is attributed to teachers' responsibility

to foster self-esteem and personality in children. In Germany, on the other hand, children's performance may have a higher priority, presumably especially in elementary schools with regard to the early tracking for future schooling; however, in order to gain more precise insights into cultural differences and to draw valid comparative conclusions, an analysis of the open-ended responses to questions related to student behavior of the German teacher sample needs yet to be conducted and compared to the findings from the U.S. sample (Lambert, Ullrich, & O'Donnell, 2008). Given the social constructivist view of behavior as context-dependent and related to the environmental setting as well as to sociocultural factors, the assumption would be that teachers' perceptions and management of disruptive student behavior vary. Future research may compare teacher perceptions of student behavior patterns by using a more differentiated questionnaire with a wider range of possible problem behaviors. This may lead to a theory about specific facets of culture which may influence teacher perceptions of student behavior.

Administrative Demands

In both samples paperwork requirements were reported as most demanding. This outcome supports Moriatry et al. (2001) who found that teachers were most concerned about excessive paperwork requirements. The administrative demands rated by the next-highest percentage of teachers in the U.S. sample were related to activities specific to teaching (grading, assessing, preparing lessons, and setting up the classroom) and to the school environment (non-teaching related duties). This confirms the overall finding that the U.S. teacher sample in this study may have had fewer resources at hand to meet the demands of teaching than the German teacher sample. Again, differences in perceptions of available resources between the two countries as reflected by responses to open-ended

responses with regard to resources have yet to be analyzed for both samples. Overall, types of support that are perceived as most helpful by teachers is an important area for future research for teachers on both sides of the Atlantic.

In the German sample, the highest percentages were more related to school leadership issues such as externally imposed changes, administrative disruptions, and meetings. Excessive administrative demands may be the result of poor leadership preparation, which can lead to a number of other negative consequences that are well documented in the literature, e. g., lack of communication (Calabrese, 1987; Pahnos, 1990). It is important for principals to assume responsibility for creating positive environments, where teachers are valued for their talents, commitment, and effort (Calabrese, 1987). Baily, Fillos, and Kelly (1987) found high levels of stress in principals and inability to cope effectively. Thus, there is a need for pre-service as well as ongoing support for principals to be able to sustain effective and thoughtful leadership (Hancock & Müller, 2008). According to Dorman (2003), the investigation of narrow, single-sided sets of predictors has in the past contributed to educational stakeholders' and principals' refusal to assume responsibility for their lack of organizational and managerial skills and to ignore the relationship of poor leadership and teacher stress and burnout.

Availability of Instructional Resources

In terms of availability of instructional resources, both samples reported relatively low levels of demands (see Table 10). The highest percentage in the U.S. sample (20.20%) occurred in response to the items regarding instructional technology. In Germany it came for items regarding the availability of instructional supplies such as consumable materials, pencils, paper or markers. This makes sense in so far as such

materials are usually not provided in German elementary schools; however, not many teachers rated this demand as a very challenging one (4.80%). The second highest percentage occurred also for items regarding instructional technology (4.30%).

Limitations. Overall, the findings suggest that the U.S. sample rated all demands as more challenging than the German sample; however, during data entry, a certain pattern of responses by participants in the German sample was observed, i.e., participants had a tendency to choose extreme alternatives in a positive sense. Categorically, they gave low ratings in the demands section and high ratings in the resources section; however, the same participants provided often lengthy qualitative reports in response to the open-ended questions. Those were mostly related to ineffective leadership, lack of social support among teachers, and pressure through educational reforms. This tendency may have impacted the findings of this study. Finally, there may have been a number of questions that were not applicable for the majority of elementary teachers in the German sample. For example, very few German elementary teachers have a teacher's aid or a teacher assistant in their classroom or specialized personnel to help with behavioral or learning difficulties. This may explain the fact that the second-highest percentage for most challenging demands was for differences in learning abilities and not like in the U.S. sample for administrative demands.

5.1.2 Research Question Two

The second research question was what percentage of teachers was at risk for stress. Teachers from the U.S. sample perceived demands greater than resources 32.6% of the time and teachers in the German sample 32.7% of the time. However, resources were perceived as greater than demands 40% of the time in the German sample and only 33%

in the U.S. sample. In the resources are equal to demands group, the U.S. sample was represented with 34.44% and the German sample with 27.40%. Thus, there was no difference in stress levels between the two countries even though demands were higher and resources lower in the U.S. teacher sample.

A previous study using the CARD with a sample of 276 elementary teachers also found approximately one in three teachers to be at risk for stress (31.9%) (Lambert et al., 2007). O'Donnell et al. (2008) found for a sample of elementary teachers that Demands were perceived as being greater than Resources only 24% of the time. Using the preschool version of the CARD, Lambert et al. (2006) also found that approximately one in three elementary teachers were at risk for stress.

Burnout by Stress Group

Group differences in burnout symptoms were examined for each stress group. In the U.S. sample, burnout means in the D > R and R = D group were significantly higher than in the R > D group. There was no difference between the means of the D > R and the D = R groups except for EE. Post hoc comparisons between stress groups on burnout dimensions showed that scores on EE were consistently higher than for the dimensions DP and PA in all three stress level groups. This finding confirms the underlying concept of burnout, in which EE is the major dimension. In the literature it is widely considered to be the most representative sub-scale of the burnout phenomenon. Therefore, it makes sense if the burnout scores on this dimension are higher than on the other burnout dimensions and highest in the D > R (at risk for stress) group since stress is a predictor of burnout.

In the German sample, differences were found between all three stress groups for all burnout subscales as well as for Self-Acceptance. Means for the D > R group were significantly higher than in the R > D and the D = R groups for all burnout dimensions but not for SAC.

Mean scores on the EE dimension of burnout were higher than for the dimensions DP and PA in the R = D and the D > R groups, but not in the R > D group. In this group the highest mean score was in the PA dimension of burnout. Given that lower PA is associated with lower efficacy in dealing with the demands of teaching, it is noteworthy that high resources would result in low feelings of PA. The mean score on lack of PA is high even though resources are appraised to be high by respondents who fell in this category. Given that the PA dimension of burnout is often referred to as the evaluation of self component of burnout and is related to the perceived competence to deal with demands, this finding may indicate that other factors than just stress (defined as imbalance between resources and demands in this study) may also be impacting this burnout dimension, for example preventive coping. The fact that overall, SAC was lower in the German teacher sample than in the U.S. sample may be related to cultural or historical factors that were not assessed in this study.

Self-Acceptance by Stress Group

The fact that the sample of German teachers who were at risk for stress (D > R) also had the lowest scores on Self-Acceptance may mean that German teachers define themselves more by their daily accomplishments and failures in the workplace. Another possible reason may be related to the fact that the German teacher sample as a whole was older and therefore more career-oriented. There were not as many young teachers who

may still be undecided whether to choose teaching as a career or to quit teaching. It may be assumed that the overall identification with the chosen profession was therefore stronger in the German sample. If faced with challenges, the level of Self-Acceptance as a coping resource may be more affected for those teachers. This may also explain the lower scores on PA and DP in the D > R group in the German sample.

There is also a connection with the finding from the literature that in the United States every second teacher quits after the first 5 years, while German teachers are more likely to remain in the profession but to retire early. The structure of teacher preparation programs and the type of professional choice may explain this difference in that German teacher education students may already be more committed upon enrolling in a teacher education program at a university for teacher education (Pädagogische Hochschule). In addition, the 2-year in-service teacher preparation period that follows graduation (Referendariat) provides intense practical training including observations and examinations, which may strongly shape beginning teachers' professional identity and ground them in the theory and practice of teaching. Upon entering the classroom as a fully employed teacher they may encounter a type of culture shock based on the cognitive dissonance resulting from a reality disconnect. One of the subscales in the Self-Acceptance measure, Identity Comfort, measures the degree to which a respondent is content with his or her identity and may capture this reality disconnect, i.e., the discrepancy between what teachers learn in their training and the classroom reality. Other impacting factors may include differences in teacher salary and professional recognition.

5.1.3 Research Question Three

The third research question was if any of the variance in reported burnout symptoms among elementary teachers was found between individual schools. As stated in previous chapters, teachers face a variety of demands and pressures (McCarthy & Lambert, 2006). There is ample evidence in the literature that teaching is a highly stressful profession with a wide variety of potential stressors (Kyriacou, 2001). However, McCarthy, Lambert, O'Donnell, Jazzar, and Melendres (2007) have argued that teachers' perceptions of their classroom demands and resources are often overlooked as a source of teacher stress.

Variance in Burnout Symptoms between Schools

The results of using HLM analyses to facilitate variance decomposition in both samples suggested that the majority of variance occurred between teachers. In other words, teachers' experience of burnout in both countries appeared to have little to do with differences between individual schools. The most variance was accounted for by individual differences within teachers, suggesting that individual perceptions of the balance between resources and demands were most predictive of burnout. Individual teacher appraisals of resources and demands seem to play a larger role for perceptions of stress than environmental demands and resources that differ from school to school. This may suggest the accuracy of transactional models of stress and coping. According to Lazarus and Folkman (1984) stress results from individual cognitive appraisal of demands and resources. Potentially stressful experiences can lead to burnout as a result of appraisal interactions of environmental conditions and available coping resources (McCarthy et al., 2002).

McCarthy et al. (2009) found barely enough justification to run HLM analyses for the U.S. sample, but the variation between schools was even lower for the German sample. With respect to the dependent variable in this study, which is what the variance between items, teachers, and schools was decomposed on, there did not seem to be any differences between individual schools. Therefore, it may be argued that it was not necessary to use Hierarchical Linear Modeling; however, it was important to use the same kinds of analyses for the purpose of directly comparing the U.S. and German sample. In addition, a higher percentage of between-school variance may have very well been found in the German sample and could have then been modelled while taking the nesting of teachers within schools into account. This is something ordinary linear regression analyses would not be able to accomplish (see Chapter 3).

Difference between special and general education. The fact that there was no difference for the variables stress and burnout between special and general education teachers in the German sample in this study and that the means for burnout as well as for stress were approximately the same confirms transactional models of stress of stress and coping as well.

5.1.4 Research Question Four

Research question four was if there was an association between burnout symptoms of teachers, perceived classroom demands and resources, Self-Acceptance, and teaching experience. Consistent with findings from other studies, each dimension was predicted by different predictors (Aluja et al., 2005; Lee & Ashfort, 1996; Maslach et al., 1996). The different impact of the predictor variables on the three burnout dimensions in the two samples will be discussed in the following. Differences in strength of association

were also detected between the U.S. and the German teacher sample. In both samples, the strongest predictors were preventive coping/ Self-Acceptance, followed by demands, stress, and years of experience at current school. Similar to the results from the studies by O'Donnell et al. (2009) and McCarthy et al. (2009), results from this study confirm the importance of coping in the stress equation as predictors of burnout symptoms. Depending on an individual's cognitive appraisal of demands and resources, the experience of stress varies from person to person, even when dealing with the same or similar circumstances.

This confirms McCarthy et al.'s (2002) model of stress and coping, which is based on the assumption that when perceived demands outweigh resources for coping, the stress response is triggered. Physiological changes designed to prepare the body for "fight or flight" are then elicited (Sapolsky, 1998). Experiencing this stress response on a constant basis can lead to a variety of physiological, behavioral, and psychological stress symptoms, including burnout. In order to prevent this burnout process from taking place, it is essential that teachers possess adequate levels of coping resources.

It has been shown that coping mechanisms can help decrease the number of events that may be interpreted as threats to well-being, therefore reducing the occurrence of the stress response (McCarthy et al., 1997). Stress researchers have consistently identified perceptions of both perceived demands and perceived coping resources for dealing with life demands as critical variables in determining whether or not persons will experience harmful stress levels (Kokkinos, 2008; Matheny et al., 1986; Sapolsky, 1998).

Preventive Coping/ Self-Acceptance. It is not to argue that teachers are confronted with a multitude of stressors in their daily classroom teaching activities; however, results

of this study show that the impact of these stressors may be related to an individual teacher's psychological makeup, his or her way to construct the world. This finding confirms results from prior validation research on the PRI which found Self-Acceptance to be a strong predictor of teacher stress and burnout (McCarthy, Lambert, Beard, & Dematatis, 2002; Lambert et al., 2006). Those studies found statistical evidence for Self-Acceptance to be an important theoretical dimension in terms of preventing stress. A study by McCarthy et al. (2002) found a lower level of Self-Acceptance to be a statistically significant predictor for burnout in preschool teachers.

The high χ^2-values for the two random-effects models that were specified for the EE dimension of burnout and total burnout (see Table 14) indicate that there may have been other factors at work to account for the variance in both the U.S. and the German sample. Differences in culture, history, educational systems, and school leadership between the two countries may help to explain the variance in the dependent variable (burnout) explored in this study.

Emotional exhaustion. The central component of the burnout construct as suggested by Maslach and colleagues (1986), emotional exhaustion, was predicted by a number of variables: Teachers' years at current school, classroom demands, classroom stress, and preventive coping resources (U.S. sample). This is not surprising, given that EE is the most obvious manifestation of the burnout syndrome (Taris et al., 2005; Brouwers & Tomic, 2000). In the U.S. sample, this model explained more than one third of the variance in EE. Teachers who experienced emotional exhaustion reported higher perceived demands as well as an imbalance of such demands with classroom resources (higher stress). This suggests that the EE symptoms of burnout (i.e., feeling emotionally

drained and frustrated) are connected to both perceptions of demands and resources as Lazarus and Folkman (1984) suggested. This result is in line with research findings by Friedman (1995) and Kokkinos et al. (2005) who found demands related to challenging student behavior to be associated with the EE dimension of burnout.

Teachers in the U.S. sample scored higher on EE the longer they worked at a school. The opposite was the case for the German sample: As time spent in a school increased, the level of EE decreased. In addition, being a new teacher in the German sample also predicted the EE component of burnout to decrease. Finally, stress did not predict EE in the German sample. This result is in line with the finding that demands were perceived to be higher in the U.S. sample than in the German sample. This finding is worthy of further investigation. It may suggest that for U.S. teachers, tenure in a school contributes to their perceptions of more demands and fewer resources. Although it is beyond the scope of the current study to further explain this finding, McCarthy et al. (2009) speculated that more experienced teachers may sometimes be given greater non-classroom responsibilities and administrative functions. They may also be assigned a proportionally greater number of challenging students.

For German teachers on the other hand, EE decreased with increasing experience and was lower for new teachers. This model explained more than two thirds of the between-teacher variance in EE. The finding that EE goes down if experience increases may be explained by the fact that with experience, skills in coping with the demands of teaching increase, because teachers develop routines and a classroom management repertoire. New teachers may benefit from a sense of invigoration and moral responsibility, which motivated them to choose teaching as a career. The fact that EE was

lower for new teachers in the German sample may be attributed to a good system of support or teacher induction process, which needs further investigation.

Depersonalization. In the U.S. sample only the classroom stress score from the CARD and low preventive coping predicted symptoms of DP (evaluation of others component) (see Table 15). In the German sample, DP was predicted by demands and by SAC. Like EE, it was not predicted by classroom stress. In addition, DP increased with an increasing number of years of teaching experience, but it decreased with an increasing number of years at the current school.

A possible explanation for this finding may be that for the German sample with a higher number of years taught at the same school, social support through the development of long-term relationships with colleagues becomes stronger, which may serve as a buffer for the DP dimension of burnout. This supports findings from other studies which found social support to be an important buffering factor. For example, Greenglass et al. (1996) found that support from coworkers and supervisors buffered teachers from depersonalization. Therefore, similar to what McCarthy et al. (2009) suggested, there is a need for administrators in schools to facilitate more formalized opportunities for teachers to support each other, e.g., structured mentoring programs or staff development activities. This finding confirms the importance of promoting a sense of community and collaboration among teachers, which may attenuate the impact of stressors and contribute to a decrease in the depersonalization dimension of burnout.

The fact that years at current school was inversely related to the EE and DP dimension of burnout in the German sample, indicates an important difference between the two samples. On the other hand, years of experience in teaching was positively

associated with the DP dimension of burnout in the German sample. This is worthy of a note in light of Hughes' (2001) finding that many teachers who wish to leave the profession may be unable to do so for reasons such as unavailability of alternative work or geographic immobility. As a consequence they stay in the profession in spite of being burned out, which may include emotional detachment or depersonalization as a form of coping (Maslach et al., 2001). Dworkin (1986) also suggested that teacher entrapment is a problem in schools, i.e., many teachers spend their entire career in a surrounding that they dislike and that they would like to leave, but because they fear a loss of personal safety they stay based on the relatively stable conditions and benefits that are associated with teaching positions. Interestingly, Maslach et al. suggested that the burnout component EE can be interpreted as a coping mechanism, which prompts individuals to distance themselves from work-related matters or relationships, therefore leading to DP (McCarthy et al., 2006).

Personal accomplishment. In the U.S. sample, only classroom demands and preventive coping predicted lack of PA (evaluation of self component). Given that a decline in PA is associated with lowered feelings of efficacy in one's work (Maslach et al., 2001), it is not surprising that excessive demands would lead to reduced feelings of accomplishment. Interestingly, teachers' scores on preventive resources were an even stronger predictor of reduced PA (β = -0.280 for preventive resources versus β = 0.158 for classroom demands). This makes sense given that EE and DP may emerge from external factors such as work overload and social conflict, whereas the decreased efficacy associated with lower PA seems to arise more clearly from insufficient personal resources (Maslach et al., 2001).

In the German sample, lack of PA was also predicted by classroom demands and Self-Acceptance. It is an important difference that PA was the only burnout dimension that was predicted by stress, whereas it was in the U.S. sample the only burnout dimension, which was NOT predicted by stress (see Table 5). Stress (in this study defined as perceived imbalance between resources and demands) was a strong predictor of PA, the evaluation of self component in the burnout construct in the German sample. But in the U.S. sample stress predicted only the DP (evaluation of others) and EE (stress component) dimensions of burnout. While a causal explanation for those findings is beyond the scope of this study, this is a difference that deserves further investigation. It is in line with the finding that SAC scores were low in the D > R group of the German sample and may be related to cultural factors.

Total burnout. The total burnout score was associated in the predicted directions with four variables in both samples, namely classroom stress, classroom demands, preventive coping (or Self-Acceptance), and years at current school; however, in the German sample burnout decreased if the number of years at the current school increased while it increased in the U.S. sample if the number of years at the current school increased. This model accounted for 37.3% of the between-teacher variance in burnout in the U.S. sample and for 46.3% in the German sample.

The results of the HLM analyses for the U.S. sample suggested that increased experience at the current school was associated with both symptoms of EE and overall feelings of burnout. In contrast, it appeared that in the German sample more experience at the current school functioned as a buffer for EE, for DP, and for total burnout. It was also

associated with lack of PA in teachers in the same direction, but it was not statistically significant.

According to Shirom and Mazeh (1988), levels of burnout vary across the career span and cycle from high to low over approximately 5-year periods. This being said, a higher number of years spent at the same school would not predict burnout, but rather a teacher's place in the cycling period.

In addition, Savicki (2002) found in a pan-cultural analysis of burnout in child care workers in 13 cultures that individuals in the low burnout configuration group were significantly older than in the mixed and high burnout configuration groups. The fact that the German teacher sample was older could therefore be another possible explanation for this finding. Older age being related to lower burnout is a consistent finding in the literature. Two possible reasons exist for this relationship. First, it may be that only teachers with good coping skills continue teaching, which would explain if burnout went down with increased number of years at the current school. The second explanation is more probable, i.e., teachers gain experience, which helps them to focus on developing their teaching skills, their coping strategies, and on actively working towards creating a good environment for themselves.

McCarthy et al. (2009) suggested that elementary school administrators should consider teacher stress as an important contextual variable when allocating classroom resources, because teachers' professional functioning may be affected by perceived inequalities between classrooms with respect to such factors as number children with special needs, available sources of support and assistance in the classroom, and duties outside the classroom. Administrators may need to assess the classroom social

environment early in the academic year and consider reallocating resources so that teachers perceive equity in these factors. In addition, teachers with more experience should not be considered immune to the effects of stress.

As for the German sample, a stronger focus should be directed towards promoting preventive resources, social support, and on reducing classroom demands, in particular administrative demands, and other student-related demands. Efforts to attenuate teacher stress and burnout should focus on establishing learning communities for teachers, where ongoing, collaborative opportunities for teacher learning are encouraged and teachers can benefit from each other's expertise and experience. For example, the formation of support teams, which collaborate with teachers in helping individual children with learning or other behavior difficulties may be very helpful for teachers to reduce classroom demands.

Summary

In both samples, the strongest predictor for all burnout dimensions and the total burnout score was preventive coping or Self-Acceptance, which substantiates empirically the importance of this factor. Findings suggest that it may serve as a mediator variable through which effects of environmental stressors are filtered (Lambert et al., 2006). The finding that both personality-related and classroom demands are associated with burnout dimensions is consistent with most recent research (Kokkinos et al., 2005; Kokkinos, 2007).

5.2 Contribution to the Literature

This study contributes to the current literature base on teacher stress and coping in several important ways. First, exploring stressors that may trigger burnout symptoms has a potential for improving supports in schools for administrators, teachers, and students

(Cooley & Yavonoff, 1996). A better understanding of the factors that contribute to stress and burnout in teachers can inform efforts to increase coping skills in teachers. Findings from this study can potentially contribute to stronger professional development (Makkonen, 2005; Richin et al., 2003) and inform teacher pre- and in-service training, which address the practical needs of teachers.

Next, learning about cultural differences may be helpful in reflecting on perspectives and efforts to help reduce stressors in the teaching profession in new ways. By adding a cross-cultural perspective to the prior research base this study may contribute to the development of theory related to teacher stress and burnout. To date, no study has been conducted that cross-culturally compared stress and burnout levels in elementary teachers in the U.S. and Germany using the variables years of experience and occupational stress.

Third, the results of this study suggest that the German CARD version provides reliable and valid information, which addresses the need for survey instruments that assess the situationally specific circumstances of classroom teachers, e.g., demands related to teacher perceptions of administrative support or student behavior (Kyriacou, 2001).

Fourth, the findings show that there was no difference in perceived stress even though there were significant differences in perceived resources and demands. This confirms transactional models of stress, which emphasize the important role of cognitive appraisal of potentially demanding situations. The results also confirm that possessing adequate levels of preventive coping/ SAC is a benefit, because fewer events may be interpreted as threats to well-being. Consequently, the stress response becomes

unnecessary. With respect to the hypothesized path between preventive coping resources and appraisal in McCarthy et al.'s (2002) model, once demands are perceived to outweigh resources, adequate levels of preventive coping/ SAC can mitigate the impact of stressors.

Several aspects of the study address the limitations of previous work. In contrast to previous studies (Hastings & Bham, 2003), this study used large sample sizes, which helps to extend generalization of findings. The present study also extended the level of statistical analysis from previous studies. Finally, it was based on a theoretical framework which addresses a critical element that is missing from much of the survey literature on teacher stress and coping (McCarthy et al., 2002). Before discussing the implications for practice of this study, the limitations and suggestions for future research will be outlined.

5.3 Limitations

Several limitations to the current study have to be noted. First, both teacher samples were convenience samples. This is particularly important with regard to interpreting the results of research question 3, where no difference was found between schools. Findings are limited by the fact that for the U.S. sample, only three neighboring school systems in one geographic region were represented. The German sample included school systems from four neighboring school districts in Baden-Württemberg. Data collection in both countries attempted to include schools from urban, suburban, and rural settings, but they still had similar demographic compositions. The lack of variance could be related to the homogeneous nature of the sample. A more culturally and geographically diverse sample of schools could have resulted in higher levels of variance

between the schools. It would be interesting to compare teacher perceptions among different types of school districts (i.e. rural, urban, and suburban) in both countries.

In addition, the U.S. sample included only 13 schools with a response rate of 77.62%. Examining school level effects including organizational variables in the models was not only restricted by the very low between-school variances in both samples, but in the U.S. sample also because of the low number of schools. The German sample included participants from 62 schools with a response rate of 60.56%; however, there were a lot of schools, whose administrators did not agree to participate in the study. Consequently, teachers from those schools did not have the opportunity to participate in the study, which may have created non-response error. Due to a similar study being conducted during the same time period, a large sample frame was chosen (1,124 schools) in order to achieve a comparable sample size and in order to compensate for non-response error. This difference in data collection procedures inhibits the researcher from generalizing findings to other schools. Further research is needed with teacher samples more comparable to the U.S. sample with regard to the sampling procedures used.

Additionally, according to Körner (2003), teachers who experience the highest stress level and suffer the most from burnout symptoms are the least likely to voluntarily participate in a study like this and to answer a questionnaire. Consequently, the sample may reflect a selection of teachers who are less burdened, which may create a bias. Little information about characteristics of non-respondents may have impacted the results of the study as well.

Next, the culture of survey research has had a different development in both countries. In the U.S., it is an inherent part of a long tradition of a democratic culture, in

which people may have a stronger tendency to have their voices heard. This may also have been a reason for the low response rate achieved in the German sample, which could be compensated for by choosing as large a sample frame as possible.

Results from this study appear to suggest that German elementary teachers experience less occupational stress and burnout. This conclusion was not reflected in a preliminary analysis of teachers' comments to open-ended questions and may be due to a social desirability issue. In addition, findings from personal communications with administrators showed that intense demands through governmental reform efforts and policies were impacting elementary teachers at the time of data collection, which were only reflected in responses to open-ended questions and are not considered in the data analyzed in the present study.

The impact of specific variables related to the cultural and occupational context of the German sample were not assessed. For example, how demanding teachers perceive the fact of having to integrate themselves and their students into the stratified three-tiered school system. The relatively high percentage of responses marked as "not applicable" in the German sample may be attributed to systemic differences, which were also not assessed. These items were mostly related to demands resulting from children with special needs, who usually attend segregated schools in Germany. As a result of cultural and historical differences, educational systems in the United States and Germany developed in fundamentally different ways. The influence of cultural and historical factors on educational systems as well as on individual responses to demands and resources may have impacted the findings.

Additionally, U.S. data were collected in a time period of two years while German data were collected between September and December 2008, a 3-month period. Teachers may be more or less stressed at different times during a given school year. In both samples teachers had a wide range of years of experience in teaching. Thus, results from this study may not generalize to other schools with less variation in teaching experience. Number of hours employed was also not assessed. Full-time teachers may have experienced more job demands.

Finally, survey methodology was used. Based on the correlational nature of the results, caution needs to be taken in drawing causal inferences. The problem with self-report data is that they are potentially biased and can lead to trivial correlations (Frese & Zapf, 1988). On the other hand, collecting self-report data was most appropriate in order to best address the research questions of this study and given the theoretical framework of transactional models of stress, within which this study was conducted.

5.4 Recommendations for Future Research

The results of this study and its limitations suggest several avenues for further research. While it is important to identify factors that are associated with teacher stress and burnout, research that looks at causal relationships between stressors and burnout levels is very scarce (Evers et al., 2004). There is a need to determine why some teachers survive and thrive while other teachers burn out and/ or leave teaching under similar environmental conditions.

Since the strongest findings in this study indicate that the majority of variance occurs within schools, it is imperative that more research is done to examine why some teachers excel in specific school environments, while other teachers struggle in that same

setting. How are the successful teachers flourishing despite the same environmental conditions? It is important that effective coping mechanisms are identified at the individual teacher level.

According to transactional models of stress (Lazarus & Folkman, 1984) stress results from individual appraisals of demands and resources. Stressful experiences lead to burnout as a result from appraisal interactions in terms of environmental conditions and available coping resources. In order to help teachers to prevent excessive work related stress, it seems important to further explore these personalized differences in experiencing the stress response (Cocco, Gotti, de Mendonca, & Carles, 2003). Zellars et al. (2004) noted that the intra- and interpersonal factors in research on teacher stress and burnout have not been explored as extensively as systemic issues on the organizational level. Maslach and Leiter (1999) also suggested a stronger focus on interactions between teachers and students in research on teacher stress and burnout, because they most likely play an important role in causing teacher stress and burnout. In light of these findings, qualitative research is needed that should seek to understand teacher perceptions of classroom stressors and ways of coping. For example, the use of case study design (Stake, 1992; 2000) or in-depth interviewing using ethnographic designs (Spradley, 1979) is recommended. A more ethnographic approach or discourse analysis would help to deepen our understanding and interpretation of processes related to stress among teachers in different cultural contexts.

More than just interviews are needed. Implementing a mixed methods design by adding qualitative data from classroom observations may help advance an understanding of differences in classroom processes and interactions that promote teacher stress as well

as characteristics of teachers who experience problematic levels of stress. Combining a quantitative and a qualitative approach in a longitudinal design has long been called for by experts in the field and may most likely not only extend the existing knowledge base but also potentially inform educational policies. Finally, relating assessments of specific teacher activity in the classroom with the survey instrument used in this study may allow for important insights that may be helpful for teacher training and the development of effective interventions.

Schäfers and Koch (2000) noted that further insights into the relationship between objective and subjective stressors can only be reached by means of classroom observations. In their review of the current status of research on teacher stress, they suggested that observational approaches and analyses are promising in moving the field of teacher stress research ahead instead of continuing to assess arbitrary variables and correlating them with each other. Quantitative data collected by the CARD and PRI in this study can be used to select teachers with high and low stress levels. Ideally they would be conducted with participants chosen in each country according to the following criteria:

1. High coping skills and low stress level
2. Low coping skills and high stress level
3. High coping skills and high stress level
4. Low coping skills and low stress levels

An observation protocol, e.g. as developed by Krause (2003) may be used to gather observational data. As several authors have previously suggested (Kyriacou, 2001), the collection of observational data on occupational stress in teachers is an under-

investigated and important area for future research. It can potentially make significant contributions to the field of teacher stress and coping, because it allows for an investigation of stressors independent from subjective teacher perceptions. The main benefit of observational data may be the possibility of correlating stress levels with teaching strategies as attempted by Kruse, Krause, and Uffelmann (2006), which clearly has implications for improving instructional practices in schools and consequently for student achievement. This is particularly relevant since the results of PISA 2003 have made clear that teaching methods in German schools may not sufficiently activate students' cognitive skills (Döbert, 2007).

Observational data would also help in terms of measuring the frequency of teachers' exposure to challenging behaviors in more precise ways. In addition, triangulation of data would reduce the social desirability effects, which has previously been found to have a confounding impact on findings from survey research (Creswell, 2005). Replications with extensions including observational or other qualitative data can help to assess whether findings of the present study can be confirmed. Finally, future research that replicates and extends this work should use a more diverse sample of schools to examine whether the limited between-school variance found in this as well as in the McCarthy et al.'s (2009) study generalizes to other settings.

The possibility of generalization to teacher samples from other geographical areas within the United States and within Germany as well as other countries needs further investigation as well. It is critical to determine in future research whether a larger and more diverse sample of schools – culturally, demographically, regionally, and in terms of the socioeconomic status of the families results in more school variability in the outcome

measures. In addition, a larger and more diverse sample of schools might allow the measurement of school climate, organizational variables as well as district or policy level variables that may be associated with aggregate school-level teacher stress and burnout. By nesting teachers within schools in an HLM framework, and by measuring contextual variables such as aggregate school-level poverty, demographic characteristics, management climate and administrator traits, achievement status, and teacher characteristics, future researchers could elucidate relations between school characteristics and school means for the constructs investigated in this study.

Impact of cultural variables. The literature suggests cultural influences on teacher perceptions and the results of this study confirm it; however, the role of social norms in this is not clear. It would be useful to study cross-cultural similarities and differences in more specific ways. For example, the question how cultural work values as operationally defined by Hofstede (1980) impact the effect of stress and coping on burnout needs more research. Cultural comparison studies may help clarify this relationship. Beyond simply comparing participants' burnout scores from different countries on the MBI, it will be important to identify and analyze the impact of variables that may have moderation effects on teacher stress and burnout. Incorporating the four work-related value dimensions by Hofstede (1980) may assist in explaining the phenomenon that the U.S. sample scored higher on all burnout scales and other differences between the two countries. Those include cultural work values such as masculinity versus femininity, individualism versus collectivism, uncertainty avoidance, and power distance (Hofstede, 1980). For example, Langfeldt (1992) suggested that the baseline at which a teacher will perceive a certain disruptive behavior in the classroom as problematic varies across

cultures. The relationship between challenging student behavior and teacher stress and burnout may well vary across cultures. For example, a behavior might be considered as challenging in one culture and as desirable or just not problematic in another.

Validation research. The cross-cultural construct validity of the German versions of the CARD and PRI will need to be examined by testing their psychometric properties in order to support the validity of the adapted test versions. Additionally, the internal structure of the tests across languages (factorial equivalence) will need to be examined by a factor analysis as well as item equivalence of adapted test items by using logistic regression (Hambleton & Patsula, 2000). An attempt will need to be made to replicate previous factor analyses in order to establish the validity of the adapted test versions. Based on language and culture differences, it may be unrealistic to expect perfect replicability of all factors on the CARD. Differences in factors may be due to differences in perceived meaning due to language or cultural background. In order to determine if teachers' appraisal of resources and demands have a similar dimensional structure across cultures, further cross-cultural research is needed.

Further research using the CARD and PRI will be most useful if it can extend the reliability and validity evidence for the use of the measure in various educational contexts. Additional studies are also needed to extend the evidence for the construct validity of both measures, particularly by using them along with existing measures of coping, burnout, and stress, job satisfaction or satisfaction with school leadership.

Other variables. It would be helpful to examine how teacher perceptions of stress differ across grade levels. Examining specific stressors that occur at different grade levels may help to identify effective coping mechanisms for teachers at different grade levels.

Identifying all of the various ways in which different types of teachers from varying backgrounds and experiences perceive stress can better help us identify and teach effective coping mechanisms depending on individual teacher needs.

Next, teachers cannot be effectively supported without addressing the reality of students and their parents. Future research should improve the assessment of burnout symptoms in teachers by including the perspectives of students and parents similarly to Evers et al. (2004) who had students fill out adapted versions of the MBI, thus stressing the importance of students' perspectives and perceptions of burnout symptoms among teachers.

Even though one-third of the teachers in each of the two samples reported being stressed, many participants in the other two stress groups may have remained inspired and committed teachers for years and would have probably reported positive, satisfactory experiences. Investigating the association between job satisfaction and burnout, for example by incorporating the job satisfaction scale by Koeske et al. (1994) would be a worthwhile study. It would also be interesting to examine the differences in individual experiences of teachers stress between males and females and across varying ethnic backgrounds.

Finally, an important need for research exists in the area of intervention and evaluation research. Research findings can potentially inform the design of interventions. A next step would be to examine the outcomes through quality evaluation research on interventions, which can in turn provide empirical evidence for intervention outcomes and thus advance effective teacher support or prevention programs.

5.5 Implications for Practice

The results of this study have several implications for practice. Given the differences in predictive value of the variables between the two countries, there are also country-specific implications, e.g., with regard to the DP dimension which increased in the German sample as years of experience increased and the EE dimension, which increased for the U.S. sample if years at the current school increased.

Implications for practice must equally address both individual teacher development as well as the organizational improvement of schools. While it is important for teachers to be aware of the potential impact SAC may have on the development of stress and burnout symptoms, change at the systemic and the school level is necessary if the development of burnout symptoms in teachers is to be attenuated or prevented. Since the literature has shown that teachers who are at risk for burnout, are more prone to perceiving student behavior as severely challenging (Kokkinos et al., 2005), it is essential that steps are taken towards providing the supports necessary for teachers to be able to successfully handle the daily demands of teaching, especially in terms of providing support for children with special academic or behavioral needs.

Challenging student behavior. Demands predicted all burnout dimensions in both samples. This variable included above all demands related to challenging student behavior, which received the highest scores in both countries, followed by the student-related demand of having to adapt to different levels of ability. It is therefore important to prepare teachers to use different behavioral and instructional strategies and to support them in dealing with classroom management issues. There is also a need for ongoing

professional development opportunities in order to further develop their skills related to both teaching and coping.

Preventive coping/ SAC. It is important for teachers to become effective at changing their responses to stressors and to use effective coping strategies (McCarthy et al., 2002). Fives, Hamman, and Olivarez (2007) found that stress levels among student teachers decreased as efficacy increased. As a consequence, they emphasized the importance of adopting good coping skills in the initial stages of teacher training, namely as early as in the student teaching phase.

First, teacher training needs to provide teachers not only with the necessary knowledge and skills related to teaching, but it also needs to help them to develop a realistic understanding of the potential demands and stresses. According to Rauin (2008) improving recruitment and restructuring teacher training programs includes promoting direct contact with the classroom situation early in the teacher preparation program or as a requirement to enter a teacher education program as well as more internship experiences during coursework (Schaarschmidt & Kieschke, 2007; Döbrich et al., 2003). Providing applicants to teacher preparation programs with this information, may help attract candidates who possess the necessary coping skills or have the potential to develop them further and start a successful teaching career. It may be beneficial to increase their awareness of the process of burnout and providing opportunities to reflect on relevant individual characteristics and coping resources early in the teacher training process. Current information from research as well as experiential knowledge from veteran teachers on teacher stress and coping needs to be included into coursework in college level training and in-service training.

Mentoring. Existing induction and mentoring programs in school systems may need rethinking. Nurturing the person within a developing professional is an essential component for a mentoring process to bear fruit (Varney, 2009). In order for an authentic personal and professional relationship to develop between mentor and mentee, professional guidance and support are not sufficient. Technical advice must be coupled with emotional and psychosocial support as well as role modeling in order to promote personal growth in the mentee and thus to provide affirmation and increase motivation. Skills for effective mentoring can be taught. It can be assumed that mentoring relationships have a great potential to impact persistence, to provide affirmation, and to increase motivation in teachers.

Relationship building. The promotion of teachers' relationship competency should be infused in teacher training as well. For example, Bauer, Unterbrink, and Zimmermann (2008) developed a manual for teacher training based on their research findings. From their research they concluded that teacher training is not providing enough specific knowledge and skills related to the important ability of engaging in meaningful relationships in the teaching profession, especially with students who exhibit challenging behaviors. Teachers who possess the solid content knowledge but are unaware of helpful and efficient behaviors that promote the development of good relationships with students, will be ineffective in their teaching and are more at risk for stress, burnout, and health impairments. Those behaviors can be learned, which is what Bauer et al. (2008) demonstrate in their teacher training manual. Interventions and in-service training possibilities that support both teachers and principals in developing positive relationships

both with students and with parents may be valuable steps towards supporting teachers and principals.

But environmental stressors are not removed thereby. They need to be addressed as well. Important elements include reducing administrative demands, strengthening leadership, and systematically fostering social support among teachers (Griffith et al., 1999; van Dick et al., 1999).

Administrative demands. Ingersoll (2001) found that inadequate administrative support was a predictor for teacher turnover after controlling for teacher and school characteristics. The literature shows that lack of administrative support may be due to ineffective leadership. Ineffective leadership has been associated with the DP dimension of burnout (Grayson & Alvarez, 2008). Therefore, strengthening leadership is important. Principals play a key role in promoting positive relationships within the school community (Bryk & Schneider, 2003). In Germany, principals acquire knowledge exclusively through on the job experiences; however, it is clear that skills related to leadership and communication can be taught. One of the most important skills principals need to develop are effective communication skills. Another important ability is related to involving teachers in decision-making processes, thus allowing for their voices to be heard. According to Calabrese (1987), leadership styles that exercises decision making from top to bottom are more at risk to create stress in teachers, whereas democratic leadership styles foster involvement, vision, and overall a more positive school climate. Littrell and Billingsley (1994) reported that teachers who work in a positive environment are more likely to support each other.

Social support. Improving the solidarity between teachers for example through Balint-like supervision groups for teachers (Krause & Dorsemagen, 2007) can also contribute social support among teachers. The same is needed for principals. Ceyanes (2004) found that a trusting relationship with the principal accounted for almost 40 percent of the variance in teacher burnout.

Learning from other countries. High-achieving countries as measured by PISA as well as in the Third International Math and Science Study (TIMSS) were found to place special emphasis on building expertise in teachers before they enter the classroom and to provide ongoing professional support throughout their careers. Common features in their supports for teachers include (a) built-in time to form and foster collaborative relationships with peers in which they can continue to learn, (b) induction programs for teachers, and (c) adequate, effective, relevant, and well-designed professional development opportunities (teachers should be able to choose the topics they want to learn about).

More than 85 percent of schools in Belgium, Denmark, Finland, Hungary, Ireland, Norway, Sweden, and Switzerland provide built-in time for professional development to form and foster collaborative relationships with peers during the work day (OECD, 2007). Typically, such built-in opportunities for continued learning and to promote reflective practice are not given in U.S. and German schools even though collegial work has been found to be predictive of teacher learning (Garet, Birman, Porter, Desimone, & Herman, 1999).

High-achieving countries have also been found to support their teachers in creating opportunities to engage in collaborative research (Barber & Mourshed, 2007).

For example, the Singapore Ministry of Education has established a policy to promote teacher learning called Teacher's Network. The purpose of Teacher's Network is to foster professional development through sharing, collaboration, and reflection. Teachers observe other classrooms, engage in action research, and receive financial support if they take courses toward a master's degree to specialize in curriculum design, mentoring or school administration. The Australian government also provides incentives for teachers in a program called Quality Teacher Programme, which aims at improving teaching skills but also to enhance the status of teaching (Skilbeck & Connell, 2003). In Australia and many other countries (France, Greece, Israel, Italy, Japan, Korea, New Zealand, and Switzerland) induction programs for teachers are mandatory. They include training for mentor teachers and release time for new teachers (Wei, Andree, & Darling-Hammond, 2009).

Conclusion

This study investigated differences in perceived demands and resources, stress levels, and burnout symptoms in a sample of 451 U.S. elementary teachers and a sample of 469 German elementary teachers. The dependent variable was burnout. Predictor variables included classroom demands, years of experience, classroom stress, and preventive coping/ SAC. Similarities and differences between the two countries were examined by comparing the two samples within the same frame of reference. Findings indicated that the German sample reported fewer demands and higher resources, but the stress levels were the same. A major finding in both samples was that preventive coping/ SAC was the strongest predictor, which confirms McCarthy et al.'s (2002) model of prevention in stress and coping (figure 1). This is not to say that teachers only need to

work on themselves, because individual factors are stronger predictors of job stress and burnout. Implications for practice also include the provision of supports for teachers that are mainly related to effective leadership, formalized opportunities for collaboration and social support as well as improved teacher recruitment, training, and ongoing professional development opportunities. Creating a positive and successful school climate requires principals to provide the necessary resources, to keep bureaucratic demands at a minimum, and to provide both professional and social support.

Second, the percentage of teachers who fell in the low stress category was higher for the German sample. Third, the percentage of variance in burnout was much higher between teachers than between schools, which confirms transactional models of stress. Finally, the total burnout was associated with each predictor variable used in this investigation in the predicted direction. A multitude of studies have suggested that EE may be a core component of the burnout phenomenon (Maslach et al., 1996). In the present study it also made the strongest contribution to the overall burnout scores followed by DP and PA.

Findings from the present study suggest a need for further research. Future research needs to examine if demands are really higher and resources fewer in U.S. teacher samples than in German samples if data collection is conducted simultaneously and using very closely aligned procedures. Second, there seems to be consensus in the literature that perceptions of stress and burnout may vary from person to person within the same environment. Mediating factors on the school level such as teacher satisfaction within the school context in the prediction of burnout have yet to be investigated. More

research is also needed that investigates the mediator role of effective and supportive leadership in schools and on individual teacher level variables in both countries.

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APPENDIX A: Approval letter German Ministry of Education

Baden-Württemberg

MINISTRY OF EDUCATION

Ministry of Education Baden-Württemberg
P.O. Box 10 34 42 * 70029 Stuttgart

To
Mrs Annette Ullrich
Department of Educational Leadership
9201 University City Blvd
Charlotte, NC 28223
USA

14.08.2008

Approval of a cross-cultural study on teacher stress in schools in Baden-Württemberg and Charlotte, North Carolina (US)

Dear Mrs Ullrich,

The Ministry of Education thanks you for your request for approval of a study on teacher stress from August 3rd of 2008 and grants you approval to conduct it in schools in Baden-Württemberg. We point out that the participation of schools as well as of individual teachers occurs voluntarily and wish you a successful completion of the study.

We are very interested in the results of the study and would appreciate a copy of the findings.

Your sincerely,

Lambert
Undersecretary

Baden-Württemberg
MINISTERIUM FÜR KULTUS, JUGEND UND SPORT

Ministerium für Kultus, Jugend und Sport Baden-Württemberg
Postfach 10 34 42 • 70029 Stuttgart

Frau
Annette Ullrich
Department of Educational Leadership
9201 University City Blvd
Charlotte, NC 28223
USA

Stuttgart 14.08.2008
Durchwahl 0711 279-2824
Telefax 0711 279-2840
Name Cornelia Mayer
Gebäude Schlossplatz 4 (Neues Schloss)
Aktenzeichen 31-6499.20/511
(Bitte bei Antwort angeben)

Genehmigung einer kulturvergleichenden Studie zum Thema Lehrerbelastung in Schulen in Baden-Württemberg und Charlotte, North Carolina (US)

Sehr geehrte Frau Ullrich,

das Ministerium für Kultus, Jugend und Sport Baden-Württemberg dankt für Ihr Schreiben vom 3. August 2008 und genehmigt die geplante Befragung von Lehrerinnen und Lehrern an Schulen in Baden-Württemberg. Wir weisen darauf hin, dass die Teilnahme der Schulen sowie der einzelnen Lehrkräfte auf freiwilliger Basis erfolgt und wünschen Ihnen einen erfolgreichen Verlauf der Untersuchung.
An den Ergebnissen der Studie sind wir sehr interessiert und wären Ihnen deshalb für die Übersendung der Ergebnisse dankbar.

Mit freundlichen Grüßen

Lambert
Ministerialrat

APPENDIX B: Letter of Support

Prof. Dr. Waldemar Mittag
PH Ludwigsburg
Postfach 220
71602 Ludwigsburg

November 3, 2009

Dear Principal ,

I would like to solicit your support with a research project, which is being conducted by our partner University, the University of North Carolina at Charlotte. The Baden-Württemberg Ministry of Education has approved this study (reference number 31-6499.20/511). The purpose of the investigation is to compare levels of teacher stress and burnout cross-culturally. Data on this very important phenomenon have already been collected from a sample of 451 teachers in Charlotte, NC. The German version of the questionnaire can be found on this website, www.education.uncc.edu/teacherstress_and_coping.

If you need further background information, you can reach Prof. Dr. Richard Lambert (rglamber@uncc.edu), Annette Ullrich (aullrich@uncc.edu) or myself (mittag@ph-ludwigsburg.de) by email. If you are interested in a more detailed summary of this study, we can send you a copy. Annette Ullrich can also be reached by phone, 07152-507955 (please take the 6 hours time shift into consideration).

The timeframe of this study is as follows: Data collection will occur from mid November through mid December. Data analysis will take place completely anonymized at the University of North Carolina at Charlotte, and first results will be reported in spring of 2009.

Thank you very much.

Sincerely,

Prof. Dr. Waldemar Mittag

Pädagogische
Hochschule Ludwigsburg
Fakultät I, Institut für Pädagogische Psychologie und Soziologie

PH Ludwigsburg | Postfach 220 | 71602 Ludwigsburg

3. November 2008

Prof. Dr. Waldemar Mittag

Mittag@ph-ludwigsburg.de
Tel.: (07141) 140 - 242
Fax: (07141) 140 - 718

Sehr geehrte Schulleiterin, sehr geehrter Schulleiter,

ich möchte Sie um Ihre Unterstützung bei einer wissenschaftlichen Untersuchung bitten, die von unserer Partnerhochschule, der University of North Carolina in Charlotte/ USA, durchgeführt wird. Eine Genehmigung des Kultusministeriums Baden-Württemberg zur Durchführung dieser Untersuchung an allen Schularten im Land Baden-Württemberg liegt vor (Aktenzeichen 31-6499.20/511).

Inhaltlich geht es um eine kulturvergleichende Studie zu den Belastungen bei LehrerInnen der Klassenstufen 1-6 in den USA und in Deutschland. Im Mittelpunkt steht dabei die Frage, wie LehrerInnen schwierige und problembehaftete Verhaltensweisen bei den Schülerinnen und Schülern ihrer Klassen wahrnehmen und wie sie damit umgehen. In den USA wurden bereits 521 LehrerInnen aus Charlotte, North Carolina, mittels Fragebogen zu diesem für die Schule überaus wichtigen Themenkomplex befragt. Der dabei zum Einsatz gekommene Fragebogen ist in deutscher Version auf folgender Webseite abrufbar, www.education.uncc.edu/teacherstress_and_coping.

Falls Sie weitere Hintergrundinformationen wünschen, können Sie die Projektverantwortlichen, Herrn Prof. Dr. Richard Lambert (rglamber@uncc.edu) oder Frau Dipl.-Päd. Annette Ullrich (aullrich@uncc.edu), oder auch mich (Mittag@ph-ludwigsburg.de) über Email anschreiben. Sollten Sie zudem an einer ausführlicheren Zusammenfassung der geplanten Studie interessiert sein, können wir Ihnen diese gern zusenden. Für eventuelle Rückfragen wäre Frau Annette Ullrich auch kurzfristig unter dieser Nummer 07152-507955 zu erreichen (deutsches Festnetz mit Mailbox; Bitte die sechsstündige Zeitverschiebung in den USA berücksichtigen).

Der geplante Befragungszeitraum würde in die Zeit von Mitte November bis Mitte Dezember fallen. Die Auswertung der Daten findet vollständig anonymisiert an der UNC Charlotte statt. Die Richtlinien des Datenschutzes sind gewährleistet. Eine Berichterstattung mit Rückmeldungen an die beteiligten Schulen soll dann im Frühjahr 2009 erfolgen.

Wir würden uns sehr darüber freuen, wenn Sie die Durchführung der Studie unterstützen könnten. Teilen Sie uns dazu bitte kurz mit, ob Ihre Schule teilnehmen möchte bzw. wie viele LehrerInnen sich zur Teilnahme an der Studie bereit erklärt haben.

Mit herzlichem Dank und den besten Grüßen

Prof. Dr. Waldemar Mittag

APPENDIX C: Questionnaire

Classroom Appraisal of Resources and Demands
(CARD)
School-Age Version

Developed by Richard G. Lambert, Ph.D. University of North Carolina at Charlotte
Christopher McCarthy, Ph.D. University of Texas at Austin
Martha Abbott-Shim, Ph.D. Quality Counts, Inc.

We are interested in learning about the demands of your classroom and teaching responsibilities, and the resources you have to handle those demands. Your responses will be kept strictly confidential and anonymous. No information about your individual responses will be shared with anyone. We appreciate your time in completing this questionnaire.

Tell us about the children in your classroom.

1. How many children are in the classroom?	# _____
2. How many children have come from homes in which English is not the primary language?	# _____
3. How many children are developmentally behind most of the other children?	# _____
4. How many children have learning disabilities?	# _____
5. How many children have physical disabilities?	# _____
6. How many children are gifted or talented?	# _____
7. How many children are homeless or transient?	# _____
8. How many children have poor attendance?	# _____
9. How many children have behavior problems?	# _____
10. How many children are performing below grade level?	# _____

Tell us about yourself.

11. How many years have you worked as a teacher?	# _____
12. How many years have you worked at your current school or program?	# _____
13. What is the highest degree you have completed?	High school ___ Technical School ___ AS ___ BS ___ M.S/M.ED ___ Ph. D. ___
14. In what fields were your degree(s)?	
15. Are you currently working toward a degree?	Yes ____ No ____
16. If yes, what degree and in what field? Please specify.	
17. What is your age?	_____
18. What is your gender?	Male _____ Female _____
19. What is your ethnicity?	European American _____ African American _____ Hispanic _____ Asian _____ Other _____

Are there any other features of your classroom that make it unique?

Using the scale below, rate how **demanding** your classroom or teaching responsibilities are in these areas.

1 = Not Demanding 2= Occasionally Demanding 3 = Moderately Demanding 4 = Very Demanding 5= Extremely Demanding						
20. Number of children in the classroom.	1	2	3	4	5	NA
21. Children with limited English skills.	1	2	3	4	5	NA
22. Children from diverse cultural backgrounds.	1	2	3	4	5	NA
23. Range of developmental levels.	1	2	3	4	5	NA
24. Number of children performing below grade level.	1	2	3	4	5	NA
25. Children with learning disabilities.	1	2	3	4	5	NA
26. Children with physical disabilities.	1	2	3	4	5	NA
27. Gifted and talented children.	1	2	3	4	5	NA
28. Homeless or transient children.	1	2	3	4	5	NA
29. Children with poor attendance.	1	2	3	4	5	NA
30. Disruptive children.	1	2	3	4	5	NA
31. Children who do not follow directions.	1	2	3	4	5	NA
32. Children with problem behaviors.	1	2	3	4	5	NA
33. Children who require more time and energy than most children.	1	2	3	4	5	NA
34. Paperwork requirements.	1	2	3	4	5	NA
35. Number of program / administrative disruptions to the daily schedule.	1	2	3	4	5	NA
36. Amount of physical classroom space.	1	2	3	4	5	NA
37. Classroom environment conditions (heating, cooling, lighting, etc.).	1	2	3	4	5	NA
38. Availability of instructional resources (supporting materials, teacher guides, etc).	1	2	3	4	5	NA
39. Availability of instructional materials (non-consumable materials; manipulatives, books).	1	2	3	4	5	NA
40. Availability of instructional supplies (consumable materials; pencils, paper, markers, etc.).	1	2	3	4	5	NA
41. Availability of instructional technology (computers, software, printers, scanners, etc.).	1	2	3	4	5	NA
42. Instructional materials and resources that are out dated (not the current editions, etc.).	1	2	3	4	5	NA
43. Time and effort working with protégé teachers (teachers you are mentoring).	1	2	3	4	5	NA
44. Meetings you are required to attend.	1	2	3	4	5	NA
45. Time spent performing non-teaching related duties (monitoring bus, cleaning, etc.).	1	2	3	4	5	NA
46. Parent conferences and contacts.	1	2	3	4	5	NA
47. Formal testing and objective assessments.	1	2	3	4	5	NA
48. Portfolios, performance assessments, or teacher ratings of children's achievement.	1	2	3	4	5	NA
49. Grading student work.	1	2	3	4	5	NA
50. Preparing lessons.	1	2	3	4	5	NA
51. Setting up the classroom for instructional activities.	1	2	3	4	5	NA
52. Preparing classroom materials.	1	2	3	4	5	NA
53. Externally imposed changes to the expectations for your job performance.	1	2	3	4	5	NA
54. Overall how demanding is your classroom?	1	2	3	4	5	NA

Using the scale below, rate how **helpful** each of these resources is with classroom and teaching responsibilities.

1 = Very Unhelpful 2= Unhelpful 3 =Neutral 4= Moderately Helpful 5= Very Helpful						
55. Aides/ assistants.	1	2	3	4	5	NA
56. Parent volunteers in the classroom.	1	2	3	4	5	NA
57. Parent support of school learning activities (field trips, providing materials, etc.).	1	2	3	4	5	NA
58. Parent support of learning activities at home (homework, enrichment activities, etc.).	1	2	3	4	5	NA
59. Adult mentors from the community.	1	2	3	4	5	NA
60. Administrators at your school.	1	2	3	4	5	NA
61. Support personnel for children with learning disabilities.	1	2	3	4	5	NA
62. Support personnel for children with physical disabilities.	1	2	3	4	5	NA
63. Support personnel for gifted or talented children.	1	2	3	4	5	NA
64. Support personnel for children with limited English skills.	1	2	3	4	5	NA
65. Support personnel for children from diverse cultural backgrounds.	1	2	3	4	5	NA
66. Support personnel for children with problem behaviors.	1	2	3	4	5	NA
67. Support personnel for children performing below grade level.	1	2	3	4	5	NA
68. Support personnel for computers and instructional technology.	1	2	3	4	5	NA
69. Counselors or family services workers.	1	2	3	4	5	NA
70. Special area teachers (art, music, PE, etc).	1	2	3	4	5	NA
71. Other teachers (peers).	1	2	3	4	5	NA
72. Mentor teachers.	1	2	3	4	5	NA
73. Staff development opportunities.	1	2	3	4	5	NA
74. Materials for children with learning disabilities.	1	2	3	4	5	NA
75. Materials for children with physical disabilities.	1	2	3	4	5	NA
76. Materials for gifted or talented children.	1	2	3	4	5	NA
77. Materials for children with limited English skills.	1	2	3	4	5	NA
78. Materials for children from diverse cultural backgrounds.	1	2	3	4	5	NA
79. Materials for children with problem behaviors.	1	2	3	4	5	NA
80. Materials for children performing below grade level.	1	2	3	4	5	NA
81. Instructional resources provided by your school or program (supporting materials, teacher guides, etc.).	1	2	3	4	5	NA
82. Instructional materials (non-consumable materials, manipulatives, books).	1	2	3	4	5	NA
83. Instructional supplies provided by your school or program (paper, pencils, markers, etc.).	1	2	3	4	5	NA
84. Overall, how would you rate the resources available to help you with the demands of your classroom?	1	2	3	4	5	NA

Do you spend your own money for classroom supplies and materials? ☐ Yes ☐ No

If you answered yes, how much money do you typically spend during the academic year? $_____

Help us to understand your plans for next year. This information will not be shared with anyone.

I intend to continue teaching. ☐ Yes ☐ No

If you answered no, please check the primary reason for your decision.

- ☐ Promotion out of the classroom.
- ☐ Continue my education but plan to return to teaching.
- ☐ Personal reasons (family move, spend more time with children, pregnancy, family illness, retirement, etc.).
- ☐ Professional reasons (pursuing another career, no longer like teaching, stresses of teaching, low pay, lack of recognition, etc…).
- ☐ Other (please specify)._____

If the demands of your classroom were fewer, and resources were more abundant, how would your teaching be different?

Do you have any additional comments about the demands of your classroom?

Do you have any additional comments about resources that are helpful to you in dealing with the demands of your classroom?

Challenging Student Behavior (Everärt & Wolf, 2006)

The following questions are related to the impact the most challenging student behavior has on you.

92. Describe the behavior you find most challenging.

93. Why is this behavior the most challenging for you?

94. How do you handle this student's challenging behavior?

95. Do you have tips for other teachers for handling this kind of behavior?

Challenging Parent Behavior (Everärt & Wolf, 2008)

The following questions are related to the impact of the most difficult parent behavior on you.

96. Describe the behavior the most difficult parent you have to deal with in the current school year.

97. This behavior is the most difficult for me, because ...

98. How do you handle this parent's difficult behavior?

99. What recommendations do you have for other teachers for handling this kind of behavior?

Preventive Resources Inventory
(Self-Acceptance Scale)

Developed by Christopher McCarthy, Ph.D. University of Texas at Austin
Richard G. Lambert, Ph.D. University of North Carolina at Charlotte

Using the scale below, please rate the extent to which you agree or disagree with the following statements by circling a response.

1 = Strongly Disagree	2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree

1.	I know who I am.	☐	☐	☐	☐	☐
2.	I know how to think about situations in a positive way.	☐	☐	☐	☐	☐
3.	I am comfortable with the circumstances in my life.	☐	☐	☐	☐	☐
4.	I have goals that keep me focused.	☐	☐	☐	☐	☐
5.	I lead a well-rounded life.	☐	☐	☐	☐	☐
6.	When problems come up in one area they don't affect my overall happiness.	☐	☐	☐	☐	☐
7.	I do not want to trade my life for anyone else's life.	☐	☐	☐	☐	☐
8.	I have enough money for my needs.	☐	☐	☐	☐	☐
9.	I am able to prevent stress by having clear values in my life.	☐	☐	☐	☐	☐
10.	I can accept the fact that things will not always turn out the way I want.	☐	☐	☐	☐	☐
11.	I accept my imperfections.	☐	☐	☐	☐	☐
12.	I am grateful for who I am.	☐	☐	☐	☐	☐
13.	I may not always get what I want.	☐	☐	☐	☐	☐
14.	I have limitations.	☐	☐	☐	☐	☐
15.	I can usually see many ways to attack a problem.	☐	☐	☐	☐	☐

16. Do you have any additional comments regarding how you can prevent stress?

Maslach Burnout Inventory – Edcucator Survey (MBI-ES)

(Maslach, Jackson, & Leiter, 1996)

On the following page there are 22 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, check "0" (zero). If you have had this feeling, indicate how often you feel it by checking the number (from 1 to 6) that best describes how frequently you feel that way.

HOW OFTEN:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. I feel emotionally drained from my work.	0	1	2	3	4	5	6
2. I feel I treat some students as if they were impersonal objects.	0	1	2	3	4	5	6
3. I can easily understand how my students feel about things.	0	1	2	3	4	5	6
4. I feel used up at the end of the workday.	0	1	2	3	4	5	6
5. I've become more callous toward people since I took this job.	0	1	2	3	4	5	6
6. I deal very effectively with the problems of my students.	0	1	2	3	4	5	6
7. I feel I'm positively influencing other people's lives through my work.	0	1	2	3	4	5	6
8. I worry that this job is hardening me emotionally.	0	1	2	3	4	5	6
9. I feel fatigued when I get up in the morning and have to face another day on the job.	0	1	2	3	4	5	6
10 Working with people all day is really a strain for me.	0	1	2	3	4	5	6
11. I don't really care what happens to some students.	0	1	2	3	4	5	6
12. I feel very energetic.	0	1	2	3	4	5	6
13. I can easily create a relaxed atmosphere with my students.	0	1	2	3	4	5	6
14. I feel students blame me for some of their problems.	0	1	2	3	4	5	6
15. I feel burned out from my work.	0	1	2	3	4	5	6
16. I feel frustrated by my job.	0	1	2	3	4	5	6

17. I feel exhilarated after working closely with my students.	0	1	2	3	4	5	6
18. I feel I'm working too hard on my job.	0	1	2	3	4	5	6
19. I have accomplished many worthwhile things in this job.	0	1	2	3	4	5	6
20. Working with people directly puts too much stress on me.	0	1	2	3	4	5	6
21. In my work, I deal with emotional problems very calmly.	0	1	2	3	4	5	6
22. I feel like I'm at the end of my rope.	0	1	2	3	4	5	6

Thank you very much for your time!

The University of North Carolina at Charlotte
College of Education
9201 University City Blvd.
Charlotte, NC 28223

Eine Untersuchung von Stress, Coping und Burnout bei Lehrern der Klassenstufen 1-6

Liebe Befragungsteilnehmerin, lieber Befragungsteilnehmer,

erfahrene Lehrerinnen und Lehrer sind die Pfeiler unseres Bildungssystems. Dass solche dem Schuldienst erhalten bleiben, ist wichtig für die Erziehung und Entwicklung unserer Kinder. Wie können wir es angesichts der Belastungen, denen Lehrerinnen und Lehrer heutzutage ausgesetzt sind, verhindern, dass sie aufgrund von Burnout frühzeitig aus dem Schuldienst ausscheiden? Wir hoffen, einige Antworten darauf zu finden, indem wir diese Untersuchung von Stress, Stressbewältigung und Burnout durchführen.

Wenn Sie eine Schulklasse der Stufen 1-6 unterrichten, sind wir an Ihrer Teilnahme und Ihrem Input interessiert. Ihre Teilnahme in dieser Studie wird vertraulich behandelt. Bitte schreiben Sie weder Ihren Namen noch den Namen Ihrer Schule auf den Fragebogen. Falls Sie eine Frage nicht beantworten können oder wollen, überspringen Sie die Frage einfach. Diese Befragung dauert ungefähr 20 - 30 Minuten. Wenn Sie an den Ergebnissen der Studie interessiert sind, können Sie diese nach Abschluss der Auswertungen auf folgender Webseite abrufen, http://education.uncc.edu/teacherstress_and_coping.

UNC Charlotte wird sicherstellen, dass Befragungsteilnehmer fair und respektvoll behandelt werden. Sie können Kontakt mit dem Büro für die Einhaltung von Forschungsrichtlinien aufnehmen (001-704-687-3309), falls Sie Fragen hinsichtlich Ihrer Rolle als Befragungsteilnehmer haben. Wenn Sie weitere Fragen zu diesem Projekt haben, können Sie mich per Email (aullrich@uncc.edu) oder unter diesen Nummern erreichen: 001-704-687-8486 oder 07152-507955 (deutsches Festnetz; Mailbox).

Vielen Dank für Ihre Teilnahme in dieser Befragung! Wir wissen, wie beschäftigt Sie sind und schätzen Ihre Mühe sehr.

Mit freundlichen Grüßen,

A. Ullrich

Annette Ullrich, M.Ed.
Doktorandin
Department of Special Education and Child Development

Richard G. Lambert, Ph.D.
Associate Professor
Department of Educational Leadership

* *Um die Lesbarkeit zu vereinfachen, wird im folgenden die männliche Form verwendet. Angesprochen sind aber immer Vertreterinnen und Vertreter beiden Geschlechts.*

Einschätzung von Ressourcen und Anforderungen im Klassenzimmer
(Classroom Appraisal of Resources and Demands - CARD)

Entwickelt von Richard G. Lambert, Ph.D. University of North Carolina at Charlotte
Christopher McCarthy, Ph.D. University of Texas at Austin
Martha Abbott-Shim, Ph.D. Quality Counts, Inc.
Annette Ullrich, M.Ed. University of North Carolina at Charlotte

Wir interessieren uns für die Anforderungen und Verantwortlichkeiten in Ihrem Unterricht und Ihrer Klasse sowie für die Ressourcen, die Ihnen dabei zur Verfügung stehen. Ihre Antworten werden streng vertraulich und anonym behandelt. Informationen aus einzelnen Antworten werden mit niemandem geteilt. Wir danken Ihnen für die Zeit, die Sie sich zum Ausfüllen dieses Fragebogens nehmen.

A. Berichten Sie uns über die Kinder in Ihrer Klasse.

1. Wie viele Kinder sind in Ihrer Klasse? _____
2. Wie viele Kinder kommen aus Familien, in denen Deutsch nicht Muttersprache ist? _____
3. Wie viele Kinder sind in ihrer Entwicklung langsamer als andere Kinder in der Klasse? _____
4. Wie viele Kinder haben eine Lernbehinderung? _____

   4a. Wie viele Kinder haben eine geistige Behinderung? _____
5. Wie viele Kinder haben eine Körperbehinderung? _____
6. Wie viele Kinder sind hochbegabt? _____
7. Wie viele Kinder sind obdachlos oder leben in nomadischen Verhältnissen? _____
8. Wie viele Kinder haben viele Fehlzeiten? _____
9. Wie viele Kinder zeigen auffälliges Verhalten? _____
10. Wie viele Kinder liegen mit ihren Leistungen unter den Erwartungen , für ihre Alters- oder Klassenstufe? _____

B. Über Ihre Person.

11. Seit wie vielen Jahren arbeiten Sie schon als LehrerIn? _____
12. Seit wie vielen Jahren arbeiten Sie schon in dieser Schule? _____
13. Welches ist Ihr höchster Schulabschluss? Fachschule ☐ Diplom ☐ 2. Staatsexamen ☐ Promotion ☐
14. Welche Fächer haben Sie studiert? _____
15. Sind Sie im Moment in einer Ausbildung? Ja ☐ Nein ☐
16. Falls ja, für welchen Abschluss und in welchem Bereich? Bitte präzisieren Sie. _____
17. Wie alt sind Sie? _____
18. Welchen Geschlechts sind Sie? Männlich ☐ Weiblich ☐
19. Welches ist Ihre Ethnizität? Europäisch ☐ Andere ☐

Gibt es noch ein weiteres Merkmal, das Ihr Klassenzimmer einzigartig macht?

C. Bitte benutzen Sie die untenstehende Skala, um die Belastung, die Sie durch die folgenden Anforderungen und Verantwortlichkeiten in Ihrer Tätigkeit erfahren, einzuschätzen.

	1 = nicht belastend 2 = gelegentlich belastend 3 = ziemlich belastend 4 = sehr belastend 5 = extrem belastend 0 = nicht zutreffend					
	1	2	3	4	5	0
20. Anzahl der Kinder in Ihrer Klasse.	☐	☐	☐	☐	☐	☐
21. Kinder mit eingeschränkter Deutschkenntis.	☐	☐	☐	☐	☐	☐
22. Kinder mit anderem Kulturhintergrund.	☐	☐	☐	☐	☐	☐
23. Unterschiedlichkeit der Entwicklungsniveaus.	☐	☐	☐	☐	☐	☐
24. Anzahl der Kinder, deren Leistungen unter den Erwartungen für ihre Alters- oder Klassenstufe liegen.	☐	☐	☐	☐	☐	☐
25. Kinder mit Lernbehinderungen.	☐	☐	☐	☐	☐	☐
26. Kinder mit Körperbehinderungen.	☐	☐	☐	☐	☐	☐
27. Hochbegabte Kinder.	☐	☐	☐	☐	☐	☐
28. Obdachlose oder in einer Übergangsphase befindliche Kinder.	☐	☐	☐	☐	☐	☐
29. Kinder mit vielen Fehlzeiten.	☐	☐	☐	☐	☐	☐
30. Kinder, die auffälliges Verhalten zeigen.	☐	☐	☐	☐	☐	☐
31. Kinder, die sich nicht an Anweisungen halten.	☐	☐	☐	☐	☐	☐
32. Kinder mit problematischen Verhaltensweisen.	☐	☐	☐	☐	☐	☐
33. Kinder, die mehr Zeit und Energie als andere Kinder erfordern.	☐	☐	☐	☐	☐	☐
34. Bearbeitung von Anträgen, Formularen etc.	☐	☐	☐	☐	☐	☐
35. Anzahl von Unterbrechungen durch Verwaltungsangelegenheiten pro Tag.	☐	☐	☐	☐	☐	☐
36. Größe des Klassenzimmers.	☐	☐	☐	☐	☐	☐
37. Bedingungen des Klassenzimmers (Heizung, Klimaanlage, Beleuchtung etc.).	☐	☐	☐	☐	☐	☐
38. Verfügbarkeit von Unterrichtsressourcen (unterstützende Materialien, z. B. Lehrerhandbuch etc.)	☐	☐	☐	☐	☐	☐
39. Verfügbarkeit von Unterrichtsmaterial (Materialien, die nicht laufend neu angeschafft werden müssen, Veranschaulichungsmaterial, Bücher).	☐	☐	☐	☐	☐	☐
40. Verfügbarkeit von Unterrichtsbedarf (Materialien, die laufend neu angeschafft werden müssen, Bleistiftspitzer, Papier, Filzstifte etc.).	☐	☐	☐	☐	☐	☐
41. Verfügbarkeit von Unterrichtstechnologie (Computer, Software, Drucker, Scanner etc.).	☐	☐	☐	☐	☐	☐
42. Veraltetes Unterrichtsmaterial und -ressourcen (nicht die letzten Auflagen etc.).	☐	☐	☐	☐	☐	☐

	1 = nicht belastend 2 = gelegentlich belastend 3 = ziemlich belastend 4 = sehr belastend 5 = extrem belastend 0 = nicht zutreffend					
	1	2	3	4	5	0
43. Zeit und Anstrengung für Begleitung und Anleitung von Referendaren oder Praktikanten (Lehrer, denen gegenüber Sie Mentoren-Funktion haben).	☐	☐	☐	☐	☐	☐
44. Besprechungen, an denen Sie teilnehmen müssen.	☐	☐	☐	☐	☐	☐
45. Mit außerunterrichtlichen Aufgaben verbrachte Zeit (Busaufsicht, Aufräumen etc.).	☐	☐	☐	☐	☐	☐
46. Elterngespräche und -kontakte.	☐	☐	☐	☐	☐	☐
47. Formale Tests und objektive Assessments.	☐	☐	☐	☐	☐	☐
48. Portfolios, Leistungsassessment, oder -beurteilung von Lernerfolgen der Kinder.	☐	☐	☐	☐	☐	☐
49. Benotung von Schülerarbeit.	☐	☐	☐	☐	☐	☐
50. Unterrichtsvorbereitung.	☐	☐	☐	☐	☐	☐
51. Vorbereitung des Klassenzimmers für Unterrichtsaktivitäten.	☐	☐	☐	☐	☐	☐
52. Vorbereitung von Unterrichtsmaterial.	☐	☐	☐	☐	☐	☐
53. Von außen an Sie gerichtete Veränderungserwartungen an Ihre Tätigkeit.	☐	☐	☐	☐	☐	☐
54. Wie belastend ist Ihre Klasse insgesamt?	☐	☐	☐	☐	☐	☐

D. Bitte benutzen Sie die untenstehende Skala, um einzuschätzen wie hilfreich die folgenden Ressourcen für Ihre Arbeit als Erzieherin sind.

	1 = überhaupt nicht hilfreich 2 = nicht hilfreich 3 = neutral 4 = mäßig hilfreich 5 = sehr hilfreich 0 = nicht zutreffend					
	1	2	3	4	5	0
55. Hilfen/ Lernbegleiter.	☐	☐	☐	☐	☐	☐
56. Eltern, die freiwillig im Klassenzimmer aushelfen.	☐	☐	☐	☐	☐	☐
57. Unterstützung durch Eltern bei unterrichtsbezogenen Schulaktivitäten (Ausflüge, Bereitstellung von Material etc.).	☐	☐	☐	☐	☐	☐
58. Unterstützung durch Eltern bei Lernaktivitäten zuhause (Hausaufgaben, anderweitige Förderung etc.).	☐	☐	☐	☐	☐	☐
59. Erwachsene Mentoren aus der Umgebung.	☐	☐	☐	☐	☐	☐
60. Verwaltungsangestellte der Schule.	☐	☐	☐	☐	☐	☐
61. Fachkräfte zur Unterstützung von Kindern mit Lernbehinderungen.	☐	☐	☐	☐	☐	☐
62. Fachkräfte zur Unterstützung von Kindern mit körperlichen Behinderungen.	☐	☐	☐	☐	☐	☐

	1 = überhaupt nicht hilfreich 2 = nicht hilfreich 3 = neutral 4 = mäßig hilfreich 5 = sehr hilfreich 0 = nicht zutreffend					
	1	2	3	4	5	0
63. Fachkräfte zur Unterstützung von hochbegabten Kindern.	☐	☐	☐	☐	☐	☐
64. Fachkräfte zur Unterstützung von Kindern mit eingeschränkter Deutschkenntnis.	☐	☐	☐	☐	☐	☐
65. Fachkräfte zur Unterstützung von Kindern mit anderem Kulturhintergrund.	☐	☐	☐	☐	☐	☐
66. Fachkräfte zur Unterstützung von Kindern, die auffälliges Verhalten zeigen.	☐	☐	☐	☐	☐	☐
67. Fachkräfte zur Unterstützung von Kindern, deren Leistungen unter den Erwartungen für ihre Alters- oder Klassenstufe liegen.	☐	☐	☐	☐	☐	☐
68. Fachkräfte für Computer- und Unterrichtstechnologie.	☐	☐	☐	☐	☐	☐
69. Beratung oder Schulsozialarbeit.	☐	☐	☐	☐	☐	☐
70. Fachlehrer (Kunst, Musik, Sport etc).	☐	☐	☐	☐	☐	☐
71. Andere Lehrer (Kollegen).	☐	☐	☐	☐	☐	☐
72. Lehrer mit Mentorenfunktion.	☐	☐	☐	☐	☐	☐
73. Weiterbildungsmöglichkeiten.	☐	☐	☐	☐	☐	☐
74. Materialien für Kinder mit Lernbehinderungen.	☐	☐	☐	☐	☐	☐
74a. Materialien für Kinder mit geistiger Behinderung.	☐	☐	☐	☐	☐	☐
75. Materialien für Kinder mit körperlichen Behinderungen.	☐	☐	☐	☐	☐	☐
76. Materialien für hochbegabte Kinder.	☐	☐	☐	☐	☐	☐
77. Materialien für Kinder mit eingeschränkter Deutschkenntnis.	☐	☐	☐	☐	☐	☐
78. Materialien für Kinder mit anderem Kulturhintergrund.	☐	☐	☐	☐	☐	☐
79. Materialien für Kinder mit problematischen Verhaltensweisen.	☐	☐	☐	☐	☐	☐
80. Materialien für Kinder, deren Leistungen unter den Erwartungen für ihre ihre Alters- oder Klassenstufe liegen.	☐	☐	☐	☐	☐	☐
81. Unterrichtsressourcen, die von Ihrer Schule zur Verfügung gestellt werden (Fachmaterialien, Lehrerhandbuch etc.).	☐	☐	☐	☐	☐	☐
82. Unterrichtsmaterialien (Materialien, die laufend neu angeschafft werden müssen, Veranschaulichungsmaterial, Bücher)	☐	☐	☐	☐	☐	☐
83. Unterrichtsbedarf, der von Ihrer Schule zur Verfügung gestellt wird (Papier, Bleistifte, Leuchtstifte etc.).	☐	☐	☐	☐	☐	☐
84. Wie würden Sie insgesamt die verfügbaren Ressourcen einschätzen, die Ihnen für die Anforderungen als Lehrer zur Verfügung stehen?	☐	☐	☐	☐	☐	☐

E. Eigene Ressourcen

85. Bezahlen Sie Materialbedarf aus der eigenen Tasche? Ja ☐ Nein ☐

86. Falls ja, wieviel Geld geben Sie üblicherweise während eines Schuljahrs aus? € _____

F. Helfen Sie uns bitte, Ihre Pläne für das nächste Jahr zu verstehen. (Information wird mit niemandem geteilt.)

87. Ich beabsichtige weiterhin zu unterrichten. Ja ☐ Nein ☐

88. Falls nein, bitte kreuzen Sie den Hauptgrund für Ihre Entscheidung an:

☐ Versetzung auf eine andere (höhere) Position.

☐ Ich studiere weiter, plane aber in den Lehrerberuf zurückzukehren.

☐ Persönliche Gründe (Umzug der Familie, mehr Zeit mit den eigenen Kinder verbringen, Schwangerschaft, Krankheit eines Familienangehörigen, Berentung etc.).

☐ Professionelle Gründe (berufliche Umorientierung, den Lehrerberuf nicht mehr mögen, Lehrerbelastung, geringer Lohn, mangelnde Anerkenung etc.).

☐ Andere Gründe
(bitte angeben): _____

89. Wenn die Anforderungen in Ihrem Klassenzimmer geringer wären und Ihnen mehr Ressourcen zur Verfügung stünden, welchen Einfluss hätte dies auf Ihren Unterricht?

_____

90. Haben Sie weitere Kommentare hinsichtlich der Anforderungen in Ihrer Klasse?

_____

_____

91. Haben Sie weitere Ideen in Bezug auf Ressourcen, die für Sie hilfreich sind im Umgang mit den Anforderungen in Ihrer Schule?

_____

_____

Herausforderndes Verhalten von Schülern (Everärt & Wolf, 2006)

G. Die folgenden Fragen beziehen sich auf den Einfluss eines Schülers, der Sie am meisten herausfordert.

92. Bitte beschreiben Sie das Verhalten dieses Schülers.

93. Warum ist dieses Verhalten herausfordernd für Sie?

94. Wie gehen Sie normalerweise mit diesem Verhalten um?

95. Haben Sie Tipps für andere Lehrer, wie mit solchem Verhalten umgegangen werden kann?

Herausforderndes Verhalten von Eltern (Everärt & Wolf, 2008)

H. Die folgenden Fragen beziehen sich auf den Einfluss von Elternverhalten, das Sie am meisten herausfordert.

96. Bitte beschreiben Sie das Verhalten der/s schwierigsten Eltern(teils) eines Schülers Ihrer Klasse.

97. Dieses Verhalten ist fuer mich sehr schwierig, weil...

98. Wie gehen Sie normalerweise mit dem Verhalten dieser/s Eltern(teils) um?

99. Haben Sie Empfehlungen für andere Lehrer, wie mit solchem Verhalten umgegangen werden kann?

Inventar Präventiver Ressourcen

(Preventive Resources Inventory)

Entwickelt von Christopher McCarthy, Ph.D. University of Texas at Austin
Richard G. Lambert, Ph.D. University of North Carolina at Charlotte

Bitte benutzen Sie die untenstehende Skala und kreuzen Sie eine Möglichkeit an, um das Maß Ihrer Zustimmung mit den folgenden Aussagen auszudrücken.

		1 = stimmt überhaupt nicht 2 = stimmt nicht 3 = neutral 4 = stimmt 5 = stimmt völlig				
		1	**2**	**3**	**4**	**5**
1.	Ich weiss, wer ich bin.	☐	☐	☐	☐	☐
2.	Ich verstehe es, soziale Situationen positiv zu betrachten.	☐	☐	☐	☐	☐
3.	Ich fühle mich wohl mit meinen Lebensbedingungen.	☐	☐	☐	☐	☐
4.	Ich habe Ziele, die mir helfen, mein Ziel nicht aus den Augen zu verlieren.	☐	☐	☐	☐	☐
5.	Ich führe ein ausgeglichenes Leben.	☐	☐	☐	☐	☐
6.	Wenn in einem Bereich Probleme auftauchen, beeinflussen sie nicht meine Zufriedenheit insgesamt.	☐	☐	☐	☐	☐
7.	Ich möchte mein Leben nicht gegen das Leben irgend eines anderen eintauschen.	☐	☐	☐	☐	☐
8.	Ich habe genügend Geld für meine Bedürfnisse.	☐	☐	☐	☐	☐
9.	Ich bin in der Lage, Stress dadurch zu verhindern, dass ich klare Werte in meinem Leben habe.	☐	☐	☐	☐	☐
10.	Ich kann die Tatsache akzeptieren, dass Dinge manchmal nicht so laufen, wie ich will.	☐	☐	☐	☐	☐
11.	Ich akzeptiere meine Imperfektionen.	☐	☐	☐	☐	☐
12.	Ich bin dankbar für die Person, die ich bin.	☐	☐	☐	☐	☐
13.	Ich werde vielleicht nicht immer bekommen, was ich will.	☐	☐	☐	☐	☐
14.	Ich habe meine Grenzen.	☐	☐	☐	☐	☐
15.	Wenn ich ein Problem habe, sehe ich in der Regel mehrere Lösungsmöglichkeiten.	☐	☐	☐	☐	☐

16. Haben Sie weitere Kommentare, wie man Stress vermeiden kann?

_____

Maslach Burnout Inventory – Educator Survey (MBI-ES)

Deutsche Version von Enzmann und Kleiber (1989)

Im folgenden finden Sie 22 Aussagen über arbeitsbezogene Gefühle und Gedanken. Bitte entscheiden Sie für jeden Unterpunkt, ob Sie sich manchmal so fühlen.
Wenn Sie ein bestimmtes Gefühl *nie* hatten, kreuzen Sie „0“ an.
Wenn Sie dieses Gefühl hatten, benutzen Sie die untenstehende Skala und kreuzen Sie eine Möglichkeit ein, um die Häufigkeit auszudrücken.

Wie häufig?	Nie	Ein paar Mal pro Jahr oder weniger	Einmal pro Monat oder weniger	Ein paar Mal pro Monat	Einmal pro Woche	Ein paar Mal pro Woche	Jeden Tag
	0	1	2	3	4	5	6
1. Durch meine Arbeit bin ich gefühlsmäßig am Ende.	☐	☐	☐	☐	☐	☐	☐
2. Ich glaube, ich behandle Schüler zum Teil unpersönlich.	☐	☐	☐	☐	☐	☐	☐
3. Es gelingt mir gut, mich in meine Schüler hineinzuversetzen.	☐	☐	☐	☐	☐	☐	☐
4. Am Ende des Schultages fühle ich mich erledigt.	☐	☐	☐	☐	☐	☐	☐
5. Seit ich Lehrer bin, bin ich gleichgültiger gegenüber Menschen geworden.	☐	☐	☐	☐	☐	☐	☐
6. Mit den Problemen meiner Schüler kann ich sehr gut umgehen.	☐	☐	☐	☐	☐	☐	☐
7. Ich glaube, daß ich das Leben anderer Menschen durch meine Arbeit positiv beeinflusse.	☐	☐	☐	☐	☐	☐	☐
8. Ich befürchte, daß diese emotionale Arbeit mich verhärtet.	☐	☐	☐	☐	☐	☐	☐
9. Ich fühle mich schon müde, wenn ich morgens aufstehe und wieder einen Schultag vor mir habe.	☐	☐	☐	☐	☐	☐	☐
10 Den ganzen Tag mit Schülern zu arbeiten, ist eine Strapaze für mich.	☐	☐	☐	☐	☐	☐	☐
11. Bei manchen Schülern interessiert es mich im Grunde nicht, was aus ihnen wird.	☐	☐	☐	☐	☐	☐	☐
12. Ich fühle mich voller Tatkraft.	☐	☐	☐	☐	☐	☐	☐
13. Es fällt mir leicht, eine entspannte Atmosphäre mit meinen Schülern herzustellen.	☐	☐	☐	☐	☐	☐	☐
14. Ich habe den Eindruck, die Schüler geben mir die Schuld für ihre eigenen Probleme.	☐	☐	☐	☐	☐	☐	☐
15. Durch meine Arbeit fühle ich mich ausgelaugt.	☐	☐	☐	☐	☐	☐	☐
16. Meine Arbeit frustriert mich.	☐	☐	☐	☐	☐	☐	☐

Wie häufig?	Nie	Ein paar Mal pro Jahr oder weniger	Einmal pro Monat oder weniger	Ein paar Mal pro Monat	Einmal pro Woche	Ein paar Mal pro Woche	Jeden Tag
	0	1	2	3	4	5	6
17. Ich fühle mich angeregt, wenn ich mit meinen Schülern intensiv gearbeitet habe.	☐	☐	☐	☐	☐	☐	☐
18. Ich glaube, ich arbeite zu hart.	☐	☐	☐	☐	☐	☐	☐
19. Ich habe mit meiner derzeitigen Arbeit viele wertvolle Dinge erreicht.	☐	☐	☐	☐	☐	☐	☐
20. Mit jungen Menschen in der direkten Auseinandersetzung arbeiten zu müssen, belastet mich sehr.	☐	☐	☐	☐	☐	☐	☐
21. Bei der Arbeit gehe ich mit emotionalen Problemen ruhig und ausgeglichen um.	☐	☐	☐	☐	☐	☐	☐
22. Ich glaube, ich bin mit meinem Latein am Ende.	☐	☐	☐	☐	☐	☐	☐

Vielen Dank für Ihre Zeit!

11

Anhang

a) Wieviel Zeit haben Sie benötigt, um diesen Fragebogen auszufüllen?

b) Gab es Fragen, die Sie nicht verstanden haben oder die für Sie missverständlich waren?

c) Gibt es Fragen, die wir Ihrer Meinung nach hinzufügen, verbessern oder weglassen sollten?

Alle Angaben werden anonymisiert und vertraulich behandelt. Wenn Sie bereit wären, an einem Interview teilzunehmen, füllen Sie bitte den letzten Abschnitt mit Ihrer Kontaktinformation aus.

Name:

_____

Adresse:

_____

Telefon:

_____

Email:

_____

Vielen Dank für Ihre Unterstützung!

APPENDIX D: Pre-notice Letter for Principals

To the principal

Annette Ullrich, M.Ed.
Department of Special Education and Child Development
9201 University City Blvd
Charlotte, NC 28223
USA

Prof. Richard G. Lambert, Ph.D.
Department of Educational Leadership
9201 University City Blvd
Charlotte, NC 28223
USA

October 2008

An investigation of teacher stress and burnout

Dear Principal (female)/ dear Prinicpal (male),

We would like to ask you for your participation in a cross-cultural comparison study regarding teacher stress in schools in Baden-Württemberg and Charlotte, North Carolina (USA). The study is conducted in cooperation with the German Institute for International Research (Deutsches Institut fuer Internationale Paedagogische Forschung- DIPF) in Frankfurt and the University of North Carolina at Charlotte. US data have already been collected from 521 pre-school and elementary teachers. The study has been approved by the German Ministry of Education in Baden-Württemberg (reference number 31-6499.20/511).

Using multilevel analysis, this investigation seeks to understand the relationship between challenging student and parent behavior and teacher stress in teachers from grade levels 1-6 in the US and Germany. Therefore we would need at least 10-15 participants from your school.

The questionnaire as well as a form for cost reimbursement (postage and printing) can be found on this website, http://www.education.uncc.edu/teacherstress_and_coping. On this website you will also find the results of the study by the end of January or in early February.

Completed questionnaires can be sent to this address and will be forwarded to us:

Thomas Auer, Karlsruher Straße 22, 69126 Heidelberg

In November and December it would be possible for me to present the purpose of the study in a short 10-15 minutes presentation in a prescheduled teacher conference, to distribute the questionnaires to teachers, and pick them up after 20-30 minutes.

Please let us know by October 30th if you would prefer this option, if you can support us in this investigation, and how many teachers in your school have agreed to participate in the study.

If you have further questions about this study, you can reach me by Email (aullrich@uncc.edu), 001-704-687-8486 or 07152-507955 (German Mailbox).

Thank you very much for your participation in this study! We know how busy you are and appreciate your effort very much.

Sincerely,

A. Ullrich

Annette Ullrich, M.Ed.

Richard G. Lambert, Ph.D.

An die
Schulleitung

Annette Ullrich, M.Ed.
Department of Special Education and Child Development
9201 University City Blvd
Charlotte, NC 28223
USA

Prof. Richard G. Lambert, Ph.D.
Department of Educational Leadership
9201 University City Blvd
Charlotte, NC 28223
USA

Charlotte, den 1. Oktober 2008

Eine Untersuchung von Stress, Coping und Burnout bei Lehrerinnen und Lehrern

Sehr geehrte Schulleitung,

mit diesem Anschreiben möchten wir Sie um die Teilnahme Ihrer Schule an einer kulturvergleichenden Studie zum Thema Lehrerbelastung in Schulen in Baden-Württemberg und Charlotte, North Carolina (USA) bitten, die in Kooperation mit dem Deutschen Institut fuer Internationale Forschung (DIPF) in Frankfurt und der University of North Carolina at Charlotte durchgeführt wird. Die Daten fuer 521 Lehrerinnen und Lehrer aus Charlotte, North Carolina sind bereits erhoben. Eine Genehmigung des Kultusministeriums Baden-Württemberg zur Durchführung einer wissenschaftlichen Untersuchung an Schulen in Baden-Württemberg liegt uns vor (Aktenzeichen 31-6499.20/511).

Thema der Studie ist ein Vergleich von Belastungen bei Lehrerinnen und Lehrern der Klassenstufen 1-6 in USA und Deutschland. Ziel der Studie ist es, anhand des statistischen Verfahrens der Multilevelmodellierung herauszufinden, ob die Belastung eher von individuellen, also Persönlichkeitsfaktoren abhängig ist oder von Rahmenbedingungen und wie schwieriges Verhalten von Schülern sowie von Eltern dazu in Beziehung steht.

Daher bräuchten wir mindestens 10-15 TeilnehmerInnen Ihrer Schule, um bei der Durchführung der Multilevelmodellierung nicht an statistischer Validität zu verlieren. Falls Sie nähere Informationen wünschen, könnten wir Ihnen gern eine ausführlichere Projektskizze zuschicken.

Auf dieser Website http://www.education.uncc.edu/teacherstress_and_coping finden Sie sowohl den Fragebogen als auch das Formular zur Kostenerstattung. Dort können Sie Ende Januar/ Anfang Februar dann ebenfalls die Ergebnisse der Studie finden.

Die ausgefüllten Fragebögen können gesammelt und möglichst jeweils in einem verschlossenen Umschlag an diese Adresse geschickt werden, von wo aus sie an uns weitergeleitet und anonymisiert ausgewertet werden:

Thomas Auer, Karlsruher Straße 22, 69126 Heidelberg

Wenn Sie weitere Fragen haben, können Sie mich gern per Email (aullrich@uncc.edu) oder unter diesen Nummern erreichen: 001-704-687-8486 oder 07152-507955 (deutsches Festnetz; Mailbox).

Wir wissen wie beschäftigt Sie sind und wären Ihnen für Ihre Unterstützung sehr dankbar.

Mit freundlichen Grüßen,

A. Ullrich

Annette Ullrich, M.Ed.

Richard G. Lambert, Ph.D.

Table 1

Teacher Characteristics: Age, Experience, and Use of Personal Resources

	U.S. Sample (n = 451)				German Sample (n = 469)					
Variable	Mean	SD	Minimum	Maximum	Mean	SD	Minimum	Maximum	*t*	*g*
Age	37.77	10.56	22.00	65.00	44.45	11.25	23.00	64.00	-8.015***	0.582
Years of experience as a teacher	12.80	8.94	0.00	37.00	17.63	12.17	0.00	43.00	-6.818***	0.448
Years of experience at school	7.01	6.71	0.00	34.00	9.90	9.77	0.00	38.00	-5.034***	0.332
Spending money of their own	$454.97	$539.25	$20.00	$5,000.00	$279.89	$338.92	$12.80	$2,925.22	4.845***	-0.399
					218.61 €	264.72 €	10.00 €	2,250.00 €[a]		

Note . [a]Amount in $ based on conversion rate of February 5, 2009 ($1.2803=1€)

Table 2

Teacher Characteristics: Demographics

	U.S. Sample (n = 451)	German Sample (n = 469)
Variable	Percent	Percent
Spending money of their own	92.80%	79.80%
Age category		
< 30	28.40%	12.40%
30 - 34	19.00%	12.20%
35 - 39	12.20%	10.40%
40 - 44	10.40%	10.20%
45 - 49	9.90%	13.90%
50 - 54	13.40%	12.80%
> 55	7.10%	27.30%
Gender		
Male	3.90%	16.10%
Female	96.10%	83.90%
Ethnicity		
European American	90.10%	—
German	—	99.80%
African American	1.80%	—
Hispanic	0.50%	—
Other	7.50%	0.20%
New to school	17.50%	14.19%
New to teaching	5.76%	4.30%

Table 3

Teacher Characteristics: Educational Level and Type of School

	U.S. Sample (n = 451)	German Sample (n = 469)
Variable	Percent	Percent
Education Level		
Associate's Degree	7.00%	
Bachelor's Degree	62.90%	
Master's Degree	30.10%	
Doctorate	0.00%	
Fachschule (Associate's level)		3.60%
Diploma (University)		4.70%
Staatsexamen (Master-level)		90.00%
Doctorate		1.70%
Currently working towards degree	11.60%	4.50%
Intend to continue teaching	94.30%	95.10%
Reasons for leaving		
Promotion	7.70%	8.00%
Personal	38.50%	52.00%
Professional	34.60%	16.00%
Other	19.20%	24.00%
Type of school		
Special Education	0.00%	20.30%
General Education	100.00%	79.70%
Inclusion	100.00%	0.00%

Table 4

Classroom Characteristics

	U.S. Sample					German Sample				
Classroom Feature	Mean Number of Children	SD	Min	Max	Mean Percent of the Classroom	Mean Number of Children	SD	Min	Max	Mean Percent of the Classroom
Class size	21.84	4.09	7	32		19.23	6.22	5	30	
Learning the language of instruction	2.71	3.75	0	24	12.41%	5.85	4.45	0	22	30.42%
Developementally behind most other children	4.30	3.81	0	25	19.69%	3.75	2.83	0	23	19.50%
Learning disabilities	2.94	2.81	0	23	13.46%	2.77	3.76	0	19	14.40%
Physical disabilities	0.35	0.86	0	9	1.60%	0.12	0.36	0	3	0.62%
Gifted or talented	2.02	2.26	0	11	9.25%	0.29	0.65	0	6	1.51%
Homeless or transient	0.26	0.72	0	5	1.19%	0.03	0.19	0	2	0.16%
Poor attendance	1.57	1.57	0	10	7.19%	0.75	1.27	0	13	3.90%
Behavior Problems	3.59	2.67	0	16	16.44%	3.88	4.08	0	20	20.18%
Performing below grade level	5.69	4.12	0	25	26.05%	4.08	3.41	0	20	21.22%

Note . CARD Items C1-C10

Table 5

Scores on Outcome Measures (MBI and SAC scale from PRI)

	U.S. Sample (n = 451)					German Sample (n = 469)						
Measure and Number of Items	Mean	SD	Min	Max	Cronbach's Alpha	Mean	SD	Min	Max	Cronbach's Alpha	*t*	*g*
Maslach Burnout Inventory												
Emotional Exhaustion (9)	20.56	10.11	0.00	46.00	.859	14.96	8.53	0.00	44.00	0.853	7.032***	-0.600
Depersonalization (5)	4.46	4.41	0.00	23.00	.630	3.90	3.75	0.00	23.00	.619	2.026***	-0.134
Personal Accomplishment (8)	13.28	5.33	0.00	27.00	.623	13.68	5.46	0.00	30.00	.604	-3.706***	0.245
Total Score (22)	38.10	17.17	1.00	90.00	.881	32.51	15.10	3.00	91.00	.868	3.335***	-0.220
Preventive Resources Inventory												
Self-acceptance (15)	4.01	0.45	2.53	5.00	.842	3.82	.448	1.00	5.00	.835	6.536***	-0.431

*** p≤.001.

Table 6

Measurement Properties of the CARD Scales and Subscales

		U.S. Sample (n = 451)					German Sample (n = 469)						
Measure	Scales and Number of Items	Mean	SD	Min	Max	Cronbach's Alpha	Mean	SD	Min	Max	Cronbach's Alpha	t	g
Demands	Other Student Related Demands (11)	2.89	0.71	1.00	5.00	.798	2.25	0.67	1.00	4.17	.855	14.07***	-0.927
	Children with Problem Behaviors (4)	3.76	0.97	1.00	5.00	.892	3.34	1.01	1.00	5.00	.909	6.311***	-0.417
	Administrative Demands (15)	3.09	0.72	1.00	5.00	.871	2.18	0.59	1.00	4.53	.885	20.889***	-1.376
	Availability of Instructional Resources (5)	2.21	0.97	1.00	5.00	.874	1.62	0.66	1.00	5.00	.837	10.809***	-0.715
	Total Score (D) (35)	2.98	0.60	1.23	4.46	0.926	2.26	0.53	1.06	4.11	.932	19.309***	-1.272
Resources	Instructional Resources (9)	3.88	0.61	1.00	5.00	.844	4.21	0.55	1.10	5.00	.829	-8.612***	0.568
	Additional Adults in the Classroom (5)	3.73	0.82	1.00	5.00	.826	3.90	0.81	1.00	5.00	.843	-3.023***	0.199
	Support Personnel (9)	3.73	0.76	1.00	5.00	.899	4.15	0.78	1.00	5.00	.953	-8.122***	0.536
	Specialized Resources (7)	3.28	0.86	1.00	5.00	.931	3.86	0.87	1.00	5.00	.966	-10.000***	0.659
	Total Score (R) 30	3.69	0.61	1.00	5.00	.945	4.08	0.55	1.10	5.00	.984	-10.141***	0.669
Stress	Difference Score (D - R) (65)	-3.25	14.20	-47.05	39.33	.945	-0.02	15.56	-36.78	53.55	.965	2.56	0.017

Note. CARD items C20-C54/ C55-C84

Table 7

The Children with Problem Behaviors Subscale

	U.S. Sample			German sample		
Item	Mean	SD	Percent Demanding	Mean	SD	Percent Demanding
Disruptive children.	3.76	1.13	62.60	3.42	1.14	47.70
Children who do not follow directions.	3.81	1.08	65.10	3.41	1.12	46.80
Children with problem behaviors.	3.83	1.11	64.10	3.46	1.13	50.40
Children who require more time and energy than most children.	3.59	1.19	58.10	3.16	1.10	39.40

Note. Percent Demanding = The percentage of respondents who endorsed either Very Demanding or Extremely Demanding. (Items C30-C33)

Table 8

The Other Student-Related Demands Subscale

	U.S. Sample			German sample		
Item	Mean	SD	Percent Demanding	Mean	SD	Percent Demanding
Number of children.	3.09	1.18	38.10	2.07	1.08	12.40
Learning the language of instruction.	2.42	1.26	21.30	2.26	0.97	10.70
Children with diverse cultural backgrounds.	2.47	1.20	22.20	1.86	0.89	6.00
Range of developmental levels.	3.76	1.06	61.90	2.79	1.06	24.30
Number of children performing below grade level.	3.39	1.13	49.00	2.64	1.06	20.40
Children with learning disabilities.	3.04	1.20	35.10	2.24	1.12	16.80
Children with physical disabilities.	1.94	1.18	11.90	1.42	0.78	2.90
Gifted and talented children.	2.34	1.16	15.90	1.71	0.98	6.50
Homeless or transient children.	2.01	1.22	16.40	2.04	1.32	17.70
Children with poor attendance.	2.63	1.26	26.00	2.27	1.09	14.80

Note. Percent Demanding = The percentage of respondents who endorsed either Very Demanding or
(CARD Items C20-C29)

Table 9

The Administrative Demands Subscale

	U.S. sample			German sample		
Item	Mean	SD	Percent Demanding	Mean	SD	Percent Demanding
1. Paperwork requirements.	3.99	1.24	71.90	2.71	1.11	23.50
2. Administrative disruptions.	2.53	1.23	23.40	2.46	1.10	16.80
3. Amount of physical classroom space.	2.50	1.40	25.10	1.76	1.11	9.90
4. Classroom environment conditions.	2.18	1.28	15.60	1.64	0.86	4.50
5. Time and effort spent with mentoring	2.47	1.44	11.70	1.98	0.87	4.90
6. Meetings.	3.20	1.21	28.30	2.48	0.97	15.00
7. Non-teaching related duties (cleaning, etc.).	2.95	1.26	41.90	2.32	0.94	11.60
8. Parent conferences and contacts.	3.09	1.20	35.30	2.27	0.92	10.70
9. Formal testing and objective assessments.	3.62	1.19	37.40	2.11	0.93	8.20
10. Portfolios, performance assessments, etc.	3.65	1.19	55.80	2.49	0.95	15.20
11. Grading student work.	3.44	1.27	57.80	2.18	0.99	9.40
12. Preparing lessons.	3.29	1.10	51.70	2.01	0.78	4.30
13. Setting up the classroom for instructional activities.	3.14	1.14	43.40	1.80	0.77	2.40
14. Preparing classroom materials.	3.22	1.12	36.90	2.02	0.83	5.60
15. Externally imposed changes.	3.19	1.25	41.30	2.46	1.14	18.90

Note. Percent Demanding = The percentage of respondents who endorsed either Very Demanding or Extremely Demanding. (CARD items C34-C38, C43-C53)

Table 10

The Availability of Instructional Resources Subscale

	U.S.Sample			German sample		
Item	Mean	SD	Percent Demanding	Mean	SD	Percent Demanding
Availability of instructional resources (materials, teacher guides, etc).	2.17	1.12	11.70	1.52	0.79	2.90
Availability of instructional materials (non-consumables materials, books).	2.29	1.18	16.20	1.58	0.75	2.60
Availability of instructional supplies (consumable materials, pens, markers).	2.14	1.15	14.00	1.67	0.89	4.80
Availability of instructional technology (computers, software, printers, etc).	2.38	1.27	20.20	1.70	0.90	4.30
Instructional materials and resources are out dated (not current editions).	1.96	1.08	9.80	1.62	0.80	3.70

Note. Percent Demanding = The percentage of respondents who endorsed either Very Demanding or Extremely Demanding.

Table 11

Correlation Matrix and Reliability Coefficients for All Scale Scores

	U.S. Sample										German Sample									
Measure	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1. Years of Experience	*										*									
2. Years at Current School	.652	*									.740	*								
Preventive Resources Inventory																				
3. Self-acceptance	.058	.046	.842								.045	.002	.835							
Classroom Appraisal of Resources and Demands																				
4. Demands	.086	-.137	.130	.926							.099	.054	-.241	.932						
5. Stress	.050	.094	-.073	.738	.945						.096	.011	-.273	.778	.965					
6. Challenging Student Behavior	-.071	-.001	-.078	.625	.453	.892					.078	.049	-.178	.732	.523	.909				
Maslach Burnout Inventory																				
7. Emotional Exhaustion	.018	.118	-.371	.415	.319	.348	.859				.062	.008	-.459	.459	.427	.375	.853			
8. Depersonalization	.038	.099	-.185	.257	.210	.201	.556	.630			.016	-.070	-.223	.248	.283	.156	.492	.619		
9. Personal Accomplishment	-.028	.011	-.403	.364	.228	.255	.651	.426	.623		-.008	-.072	-.397	.324	.382	.288	.635	.485	.604	
10. Total Score	.012	.098	-.394	.426	.314	.338	.938	.727	.813	.881	.034	-.039	-.454	.439	.452	.354	.919	.703	.843	.868

NOTE. - All correlation coefficients greater than or equal to .155 are statistically significant at $p < .001$ given $n = 451$. Reliability coefficients are reported in the main diagonal.

* Reliability coefficent not applicable for this variable because it is not a scale measure.

All correlation coefficients greater than or equal to .091 are statistically significant at $p < .001$ given $n = 469$. Reliability coefficients are reported in the main diagonal.

Table 12

Frequencies and Percentages of Teachers at Risk for Stress

	U.S. Sample		German Sample	
Stress Group	Frequency	Percent	Frequency	Percent
R > D	149	33.00%	187	40.00%
D = R	155	34.40%	128	27.40%
D > R	147	32.60%	153	32.70%
Total	451	100.00%	468	100.00%

Table 13

Differences in Burnout and Self-Acceptance between Stress Groups

			U.S. Sample					
Measure	Subscale		Group 1 *n* =149 R>D	Group 2 *n* =155 R=D	Group 3 *n* =147 D>R	Total *n* =451	*F*	Post Hoc Comparisons Between Groups
MBI	EE	Mean	15.711	19.584	22.212	20.560	18.940***	3 > 2 > 1
		SD	8.820	8.933	9.699	10.110		
	DP	Mean	3.101	5.299	4.980	4.460	11.270***	3, 2 > 1
		SD	3.206	4.765	4.698	4.410		
	PA	Mean	10.765	12.974	13.361	13.280	11.089***	3, 2 > 1
		SD	4.908	5.142	5.340	5.330		
	BO	Mean	29.577	37.857	40.497	38.100	19.467***	3, 2 > 1
		SD	14.510	16.222	16.420	17.170		
PRI	SAC	Mean	4.040	3.991	4.010	4.013	.459	
		SD	.425	.463	.449	.446		
			German Sample					
Measure	Subscale		Group 1 *n* =186 R>D	Group 2 *n* =127 R=D	Group 3 *n* =151 D>R	Total *n* =464	*F*	Post Hoc Comparisons Between Groups
MBI	EE	Mean	10.881	16.024	19.046	14.955	47.373***	3 > 2 > 1
		SD	7.112	8.129	8.261	8.531		
	DP	Mean	2.822	3.992	5.126	3.892	16.898***	3 > 2 > 1
		SD	2.925	3.544	4.319	3.746		
	PA	Mean	11.274	14.488	15.947	13.675	37.496***	3 > 2 > 1
		SD	4.905	5.199	5.191	5.466		
	BO	Mean	24.919	34.504	40.119	32.489	53.758***	3 > 2 > 1
		SD	12.393	13.948	14.760	15.100		
PRI	SAC	Mean	3.942	3.833	3.664	3.821	17.282***	3, 2>1
		SD	0.467	0.408	0.411	0.448		

Note. For the MBI subscales refer to the following abbreviations: EE=Emotional Exhaustion, DP=Depersonalization, PA=Personal Accomplishment, BO=Total Burnout Score For the PRI subscale refer to the following abbreviations: SAC= Self-acceptance
***p<.001.

Table 14

Variance Decomposition and Reliability for MBI scales (German Sample)

Maslach Burnout Inventory Scale	Variance within persons %	Variance between persons %	Variance between schools %	Person mean reliability	School mean reliability	Variance reduction between persons %
Emotional exhaustion	81.3123	18.6707	0.0170	0.644	0.004	65.1
Depersonalization	83.4571	16.5288	0.0141	…	…	…
Personal accomplishment	87.6461	12.3523	0.0016	…	….	…
Total score	84.1876	15.8091	0.0033	0.802	0.001	46.3

Table 15

Teacher-level Models

Maslach Burnout Inventory Scale	Unconditional model intercept	Conditional intercept	Years of teaching experience	Years at current school	New to teaching	New to school	Classroom demands	Stress	Self-acceptance
Emotional exhaustion									
β	1.384	1.388	0.006	-0.010	-0.248	0.016	0.199	0.095	-0.314
SE	0.036	0.039	0.004	0.005	0.107	0.087	0.049	0.051	0.040
p	0.000	0.000	0.149	0.024	0.021	0.857	0.000	0.062	0.000
Depersonalization									
β	1.601	1.604	0.013	-0.019	-0.029	-0.022	0.217	0.080	-0.263
SE	0.034	0.035	0.005	0.006	0.109	0.097	0.058	0.051	0.042
p	0.000	0.000	0.004	0.002	0.789	0.820	0.000	0.120	0.000
Personal accomplishment									
β	1.534	1.534	0.000	-0.004	0.014	0.002	0.110	0.129	-0.225
SE	0.033	0.034	0.004	0.006	0.152	0.068	0.055	0.055	0.040
p	0.000	0.000	0.942	0.452	0.929	0.979	0.045	0.020	0.000
Total score									
β	1.500	1.501	0.006	-0.011	-0.113	0.002	0.177	0.100	-0.271
SE	0.030	0.032	0.004	0.005	0.100	0.074	0.045	0.043	0.038
p	0.000	0.000	0.096	0.016	0.261	0.975	0.000	0.021	0.000

Note . N = 460 teachers within 62 schools